Amateur Radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

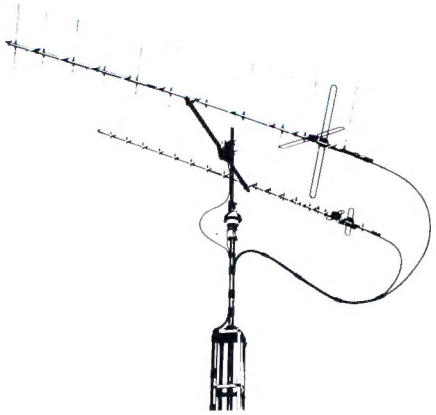
VOL 54, No 4, APRIL 1986

Will
HALLEY'S COMET
affect radio propagation?

To construct:
DUAL LED LEVEL INDICATORS
4 WATTS, 80 METRE CW TRANSMITTER
for under $40
HALO for 6 METRES

Band Plans for
VHF & UHF
3.5GHz WORLD RECORD
claimed by Australians

SATELLITE ANTENNAS for OSCAR 10



WHS32

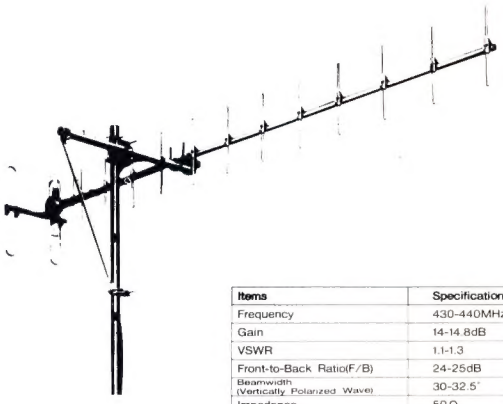
Circularly Polarised Wave; High performance using High Quality Materials.

Since the maximum gain of the transmission antenna on 430MHz is 13.4dB, and the maximum gain of the reception antenna on 144MHz is 12dB, top reception is achieved without the use of a preamplifier.

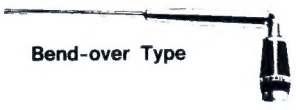
Items	430MHz Band	144MHz Band
Frequency Range	430 ~ 440MHz	144 ~ 146MHz
Polarization	Circularly Polarized Wave	
Gain	12.5 ~ 13.4dB	10 ~ 12dB
VSWR	1.1 ~ 1.5	
F/B	16.5 ~ 18.3dB	20.7 ~ 22.5dB
Beamwidth	27 ~ 29°	33 ~ 35°
Impedance	50Ω	
Withstanding Power	100W	
Weight	Approx. 8.7kg	
Length	3.68m	4.11m
Radius of Rotation	Approx. 2.6m	
Connector	N-Type	

50T5

Frequency Range: *50-54MHz;* Gain: *7.1-7.9dB;* VSWR Zo=50Ω: *1.1-1.5;* Front-to- Back Ratio (F/B): *14.4 — 20.1dB;* Beamwidth: *50pi9021 ~ 56pi9021;* Impedance: *50- 75Ω;* Withstanding Power: *50W;* Weight: *5.9kg;* Length: *4.32m;* Width: *3m;* Radius of Rotation: *Approx 2.62m;* Wind Load Area: *0.36m ²;* Applicable Mast: *∅32 ~ 60.5mm;* Applicable Cable: *5D, 8D, 5C, 7C*



Items	Specifications
Frequency	430-440MHz
Gain	14-14.8dB
VSWR	1.1-1.3
Front-to-Back Ratio(F/B)	24-25dB
Beamwidth (Vertically Polarized Wave)	30-32.5°
Impedance	50Ω
Withstanding Power	100W
Weight	Approx. 2.7kg
Length	2.45m
Width	0.33m
Radius of Rotation	Approx. 1.5m
Wind Load Area	0.17m²
Adaptable Mast	∅32-60.5mm
Adaptable Cable	8D2V, 10D2V



Bend-over Type

ARM5

ARM2

28P41L

Frequency Range: *28 ~ 29.7MHz;* Gain: *0dB;* Impedance: *50Ω;* VSWR: *1.2 (at adjusted frequency);* Withstanding Power: *100W;* Length: *Approx 1.9m;* Weight: *Approx 360g.*

144PWL

435PWL

MODEL	Frequency (MHz)	Gain (dB)
144PWL	50 ~ 54	0
(2-Band Type)	144 ~ 148	2.2 ~ 3.2
435PWL	144 ~ 148	1.7 ~ 2.8
(2-band Type)	430 ~ 440	5.1 ~ 5.5

VSWR	Length (m)	Weight Approx (g)	Accessories
1.2 ~ 1.5	1.26	260	Hex Wrench
1.05 ~ 1.7	1.26	260	Hex Wrench
1.1 ~ 2	0.91	270	Hex Wrench
1.15 ~ 1.4	0.91	270	Hex Wrench

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Twin interplanetary probes — Sakigake and Suisei — which were launched by Japan to intercept Halley's Comet. (See page 5).

Amateur Radio

Published monthly as the Official Journal by the Wireless Institute of Australia, founded 1910. ISSN 0002 — 6859. Registered Office: 3/105 Hawthorn Road, Caulfield North, Vic. 3161. Telephone: (03) 528 5962.

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For most people, viewing Halley's Comet is a "once-in-a-lifetime" experience as it only appears every 76 years. This month, April, is expected to be the best time to view this legendary Comet. Will it affect radio propagation? Will the moonbounce operators be able to bounce signals from Halley's Comet? Each time it re-appears technology and science is a little more advanced and technical people are able to learn a little more about it. 1758 was the first time the Comet's return was scientifically predicted. High quality telescopes were used to make accurate drawings in 1835, and in 1910 it was photographed in detail by high-powered telescopes. This time several spacecraft probes. An artists impression of two interplanetary probes, Suisei and Sakigake, are featured on this month's cover whilst on page 5, there is the article Halley's Comet — will we see it?

In Novice Notes, page 20, Drew VK3XU, has designed a nifty little four watt transmitter for 80 metre CW. Drew has approached this transmitter from two angles — in semi-kit form or construct it from the ground including making the PCBs yourself. In the kit-form the unit is very cheap and Drew is very interested to hear what readers think of this approach to simple construction.

For the VHF UHF enthusiasts, page 24 features the Band planning for your frequencies, whilst in the regular VHF UHF column there has been a new world record set for the 3.5GHz band by two Australians. Congratulations to Reg VK5QR and Wally VK6WG. (BKP)

DEADLINE

All copy for inclusion in the June 1986 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by midday, 21st April 1986.

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HAMADS should be sent direct to the same address, by the same date.

Acknowledgement may not be made unless specifically requested. All important items should be sent by Certified Mail. The Editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

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Photographic film and processing material courtesy: AGFA-GEVAERT LTD AUSTRALIA

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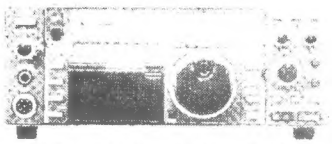

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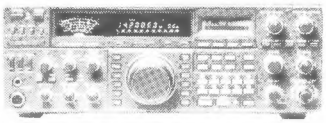

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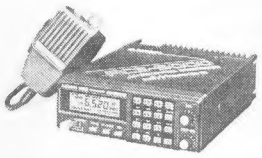

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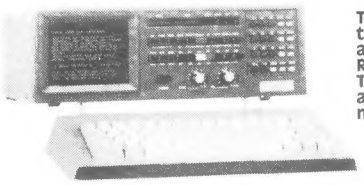

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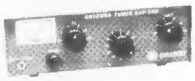

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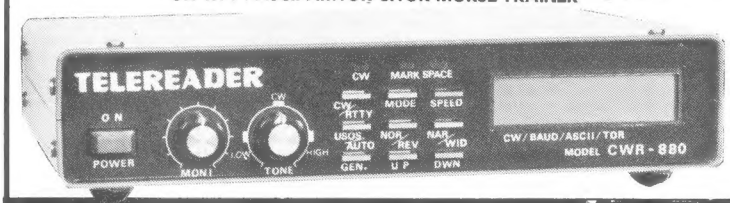

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Editor's Comment

BITS AND PIECES

The above title is a phrase beloved of an old friend of mine who recently succeeded in jumping the five words-per-minute hurdle after 27 years and graduated from a Z to a K call. He would probably not want to be identified here, but he will know to whom I send congratulations! By *bits and pieces* he sometimes meant things like resistors or nuts and bolts, but more often a collection of unrelated items all of some interest at the time. That describes this editorial very well. I think I have said before how impressed I am by the ability of newspaper columnists to come up with something readable, not once a month, but every day. And like some of those columns this month's offering is a collection of unrelated bits.

One thing that has stirred many to comment over the last few weeks has been the article by Jim VK3PC and Roger VK2ZTB, which we published in February. Some are for, some against. Some are critical of the manner of its publication. But it must be made clear that **it is only a discussion paper.** Its purpose is to provoke comment and discussion. **It is not WIA policy.** Some, perhaps most of its arguments will be discussed, formally or otherwise, at our 50th Federal Convention later this month. Some may become Institute policy this year. Or next year, sometime, or never. It all depends on the opinions of you, the members. Tell your Divisional and Federal Councillors about **your** opinions. They may be experts in telegraphy or telephony, but probably not telepathy!

I had hoped by now to have written an account of the very enjoyable trip my wife and I made last year to VK4 and VK8. Rest assured, amateurs of Cairns, Darwin, and elsewhere, that it will be done eventually. Time is the problem. Incidentally, I hope Cyclone Winifred did not change Cairns too much from the way it was in August.

We have announced in the last two months the winners of the four main Federal Awards. Two were endowed by Alan Shawsmith VK4SS and Ron Higginbotham VK3RN. A third was set up in memory of the late Ron Wilkinson VK3AKC. The fourth is the Publications Committee Technical Award. It has become obvious that these awards are not as well-known as they should be. In fact, they have been won from time to time by people who did not even know of an award's existence until they had won it! We will try to make them better known by a series of articles during 1986 in which the history and purpose of each award will be covered. All but the Ron Wilkinson Award are judged on contributions to this magazine over a calendar year. As the Sage of Oz said years ago *You've gotta be in it to win it!* so let us have your technical or general interest articles to include in the list. Some Divisions also make awards to authors of Amateur Radio articles. You may never win a Nobel Prize, but how about a WIA Award? **Over to you.**

Bill Rice VK3ABP
Editor
AR

HOBBY ON A TABLE

Allan Williams VK2FH has seen a big change in technology. Two years ago Allan was using thousands of dollars worth of equipment which filled a room, today his electronic equipment fits on a small table.

Allan became interested in radio during his primary school days, and continued through during his studies at Sydney University, but it was not until 1947 that Allan became licensed. On 16th February 1948, he joined the Institute.

Allan well remembers the flood emergency of 1955, which was mentioned in the Obituary for Kevin Watson, page 62 February, AR, and the part various members of the WIA (NSW Division) played. Allan, using the VK2WI call sign at the time, recalls how Kevin retired from the Emergency Net on 40 metres only to return a very short time later from a higher location.

The net consisted of Peter Alexander VK2PA, at Port Macquarie on the Hastings River, Noel Hansen VK2AHH, at Kempsey on the Macleay River, Crief Retallick VK2XO, at Raleigh on the Bellinger River, there was a station at Lismore on the Clarence, Russ Watt VK2WT, at Tenterfield, Jack Hill VK2ADT, at Inverell, a dentist at Narrabri worked into Sydney for days using an ATR2B transceiver which was air-dropped to him by the Disposals Committee, there was another station situated at Dubbo on the Macquarie and Hugo Stitt VK2WH was at Forbes on the Lachlan. The state was well covered.

Several others, such as John VK2AMV, Trevor VK2NS and Harold VK2AHA assisted along the way.

Such was the value of the work done by these amateurs and their second operators that Jim Corbin VK2YC, President of the WIA NSW Division, was awarded an Order of the British Empire (OBE) in recognition of the work done by members during the horrific floods.

In some ways the floods could not have come at a better time as amateurs were arguing strongly with bureaucracy not to take or curtail the best amateur bands. The plan was to allocate, amongst other things, 40 metres to commercial allocations — this was the band in which the majority of the emergency traffic was handled most reliably. Using the Flood Emergency Net operations amateurs were able to retain the 40 metre band to the limits that we have today.

The ATR2B was only one piece of equipment used during the emergency. There were Command receivers and transmitters taken from war surplus, No11 and No19 AWA equipment which had been taken from Bren Gun Carriers, tanks, etc.

Most of the equipment used 12 or 24 volt DC battery power supplies to operate generators which stepped-up the voltage to 240 volts DC or 300 volts on transmit.

So long as one could keep the batteries going the equipment proved excellent for portable gear — particularly when the AC was not operational due to rising flood-waters.

The NSW Disposals Committee purchased and sold thousands of war surplus radio items after WWII to satisfy the needs of the equipment hungary members of the WIA. The Disposals Committee consisted of Jim VK2YC, Alec Dan VK2ABU, Chairman, Harry Solomon VK2AJZ, Bert Hayes VK2AGW and Allan VK2FH. (Note: All but Allan and Alec are now SKs).

The Committee bought items for threepence (about 3 cents) and sold them for five shillings (50c), making a profit which added up to a considerable sum in those days. The question then arose; What to do with the money?

Members were wanting to move their monthly meetings from Science House, Gloucester Street, in the City, to a more accessible location at about the same time so it wasn't hard to find a use for the money. Atchison Street at North Sydney was purchased by Jim and Alec with the profits from the disposals sales and members then had their own Club Rooms. There were some objections from members as the location was not that central to members from the sprawling Southern and Western Suburbs but Atchison Street did become a prime piece of real estate.

Dural, five acres of thick bushland, was purchased as a location for VK2WI, using NSW Divisional funds.

The Division now had an electrically quiet site on which to build a communications headquarters (to be used in future emergencies such as the floods) and a club house as well.

Compiled from information supplied by Allan Williams VK2FH
AR

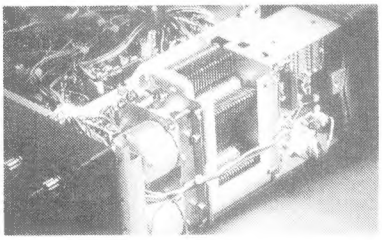
FOOTNOTE: Three years ago, Allan donated all his very old amateur equipment to the WIA NSW Division and replaced his old equipment with new, modern gear. Recently he was asked by the local newspaper to explain something of amateur radio to the readers. Allan's recollections for the paper *The Mosman Daily* and the reference to the 1955 Floods in Amateur Radio prompted him to write some notes of amateur radio within the NSW Division around the mid-50s. Many of the call signs have now been re-allocated as the original holders are silent keys.

Photograph courtesy of The Mosman Daily.

Allan VK2FH, operating his modern day station.

KENWOOD

TS-44S



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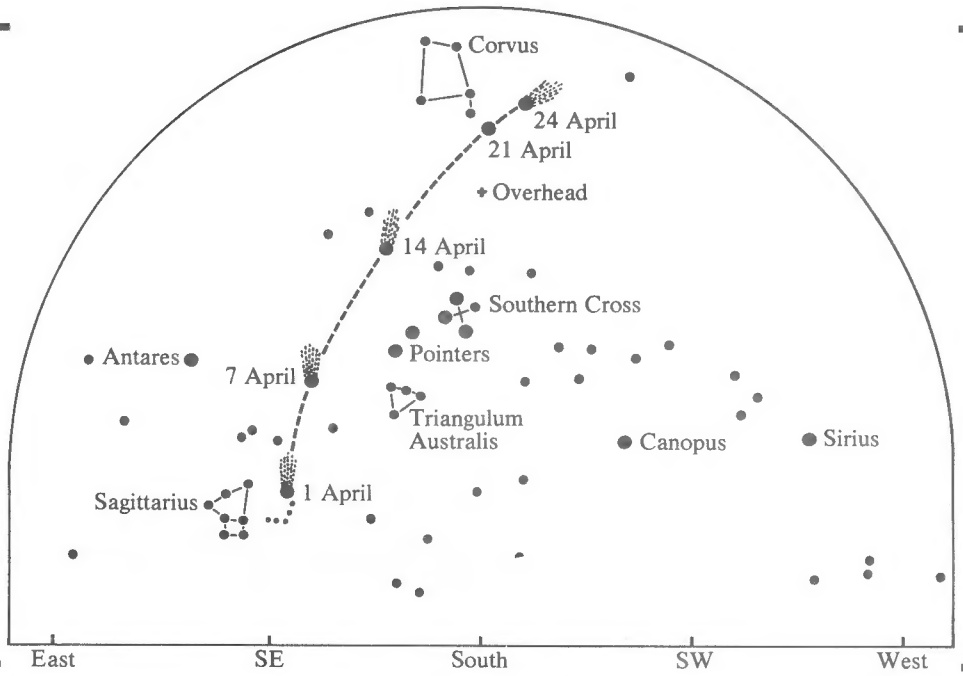
Ken McLachlan VK3AH
PO Box 39, Mooroolbark, Vic. 3138

HALLEY'S COMET — WILL WE SEE IT?

Depicted on the front cover is Halley's Comet, a phenomenon not witnessed for three quarters of a century. When last seen, there was not the sophisticated equipment and resources that are available today to track it and find out just that little more about it.



The cover design depicts the on-going global research program that Japan's Institute of Space and Astronautical Science has instituted and features the two inter-planetary vehicles that were sent to welcome Halley to our viewing. The probes named *Sakigake* meaning Pioneer and *Suisei* meaning Comet were due to intercept the Comet last month, shortly after its closest approach to the sun.

The duties of these deep space probe explorers was to gather invaluable data on solar winds, waves of plasma emitted by the sun and its effect on the Comet. Suisei, (or Comet) is intended to reveal the three dimensional structure of the hydrogen cloud surrounding the coma with an ultra-violet television camera which will beam the images back to earth from a distance of up to 170 million km away. No mean effort! !

Sakigake and Suisei were launched to gain more knowledge of this rare visitor. The USSR, NASA and others have also sent vehicles into space in the hope of gleaning a little more knowledge of this phenomenon. The 64 metre Parkes radio telescope, in New South Wales, will be a sole receiver to a probe launched by the European Space Agency.

All the information gathered will be available to eagerly awaiting scientists world-wide.

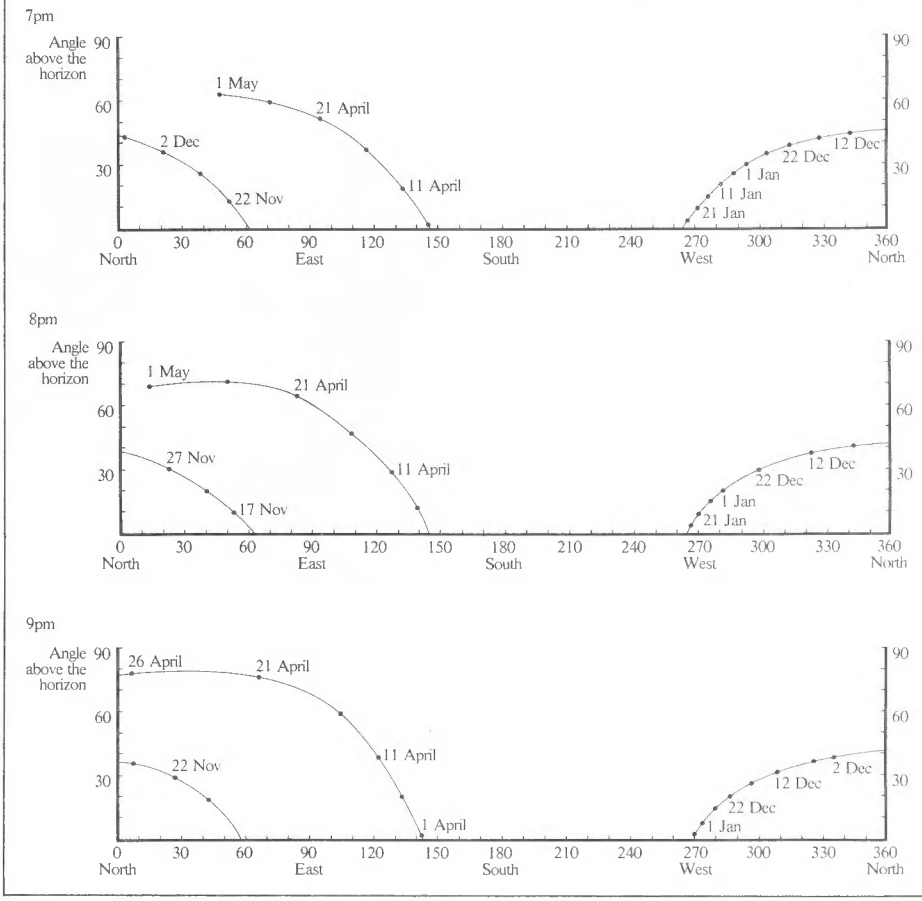
Dr Robin Hirst, Curator of Astronomy at the Museum of Victoria, in collaboration with Dr Denis Coates, a Senior Lecturer in the Department of Physics at the Monash University, have graciously allowed me to use extracts from their book *Halley's Comet - an Australian view 1985/1986,* which I recommend to all readers for a concise review of this history-making event. It is obtainable from the Melbourne Museum Bookshop for $2.95 plus postage and packing.

HALLEY

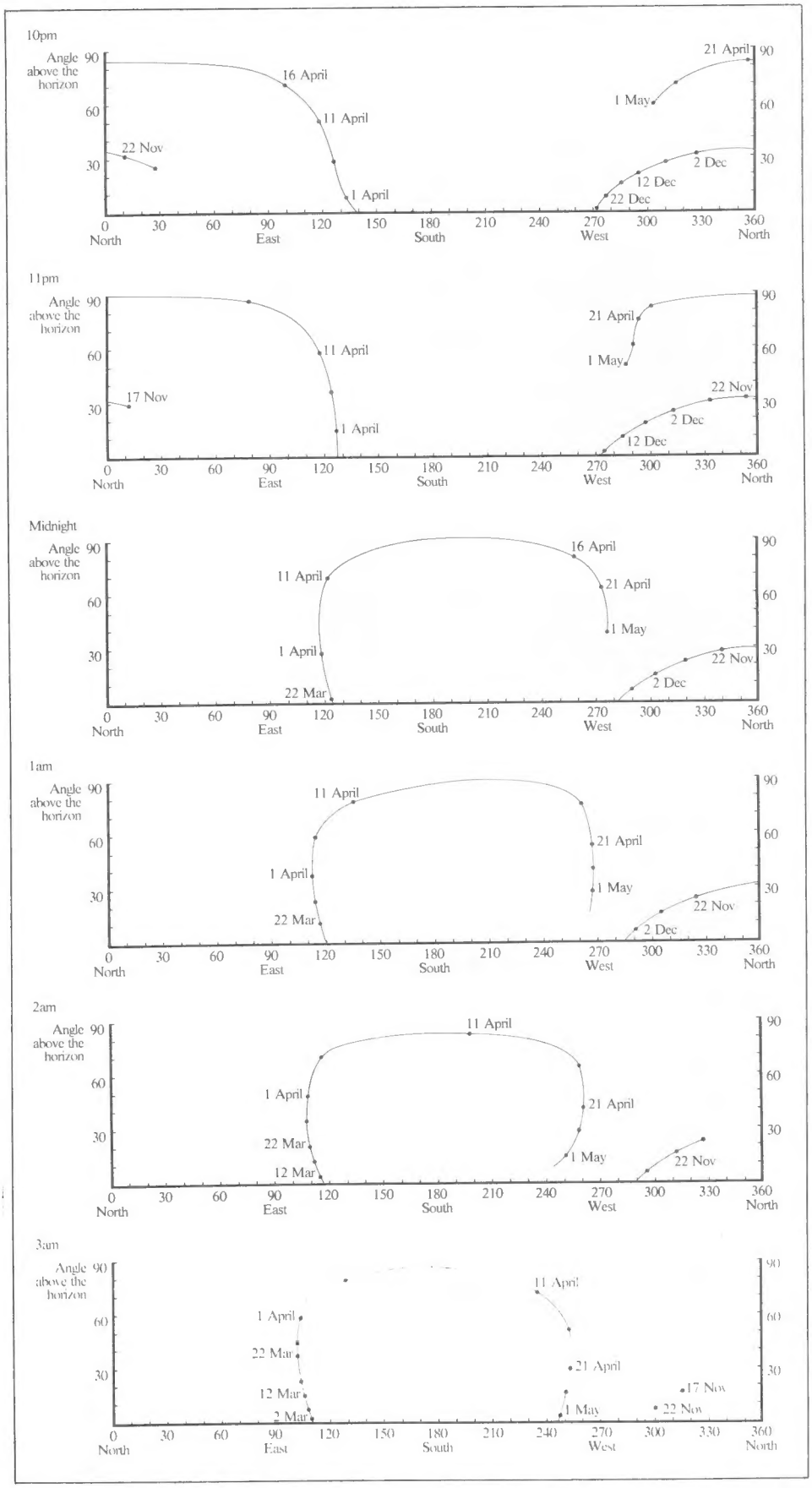
Halley's Comet was first recorded in 240 BC, when it was recorded in Chinese records, but it was not named until 1758. Edmond Halley, a keen English astronomer, later Astronomer Royal, was in his mid twenties, when he plotted the orbit and correctly predicted the Comet's return in 1758.

It was sighted in 1758, by an amateur astronomer, Johann Palitzsch, confirming Halley's prediction, and the Comet was subsequently named after Edmond. To this date there have been 30 recorded return sightings including those of two astronomers who working at the Hale Telescope on Palomar Mountain, when the Comet was detected whilst some 1 600 million kilometres from earth in 1982.

Following are a set of diagrams showing where the Comet will be each hour of the night. Select the time of night you wish to observe and select the appropriated diagram. You can then calculate the position of the Comet on the particular date. It is also possible to determine how far around the horizon it will be and how high it is in the sky. Eg: On 11th April, at 8pm, it will be 130 degrees Eastward from North and 30 degrees above the horizon.

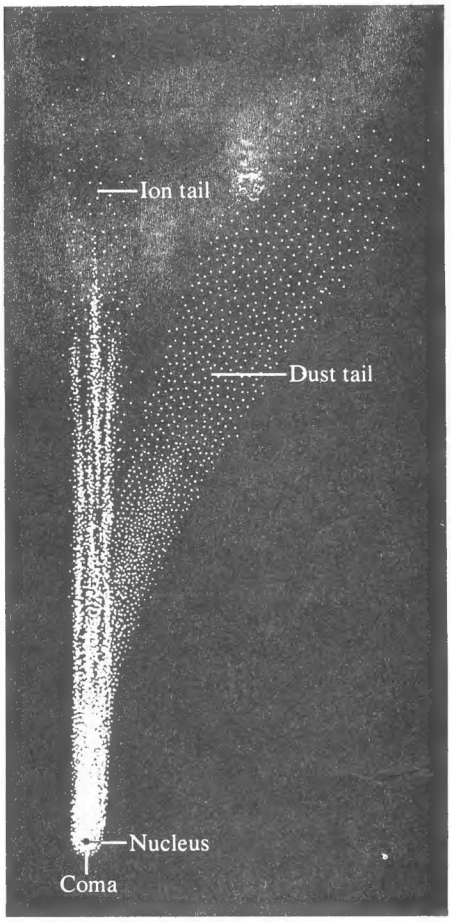


Halley's Comet is a fluffy, dusty snowball about 10 kilometres across and is part of the Solar System, trapped by the sun's gravitational pull. Its distance from the sun



varies between 90 and 5 thousand million kilometres from the sun.

It began its present return trip towards the sun in 1948, travelling at about 3 000 kilometres per hour. At this time, the Comet was just a *nucleus* of deeply frozen dust and



Parts of a comet.

ice, with a temperature of about -200 degrees Celsius. As it approaches the sun it gradually warms, and the ice turns to water vapour. Other ices in the Comet, such as methane and ammonia, also evaporate.

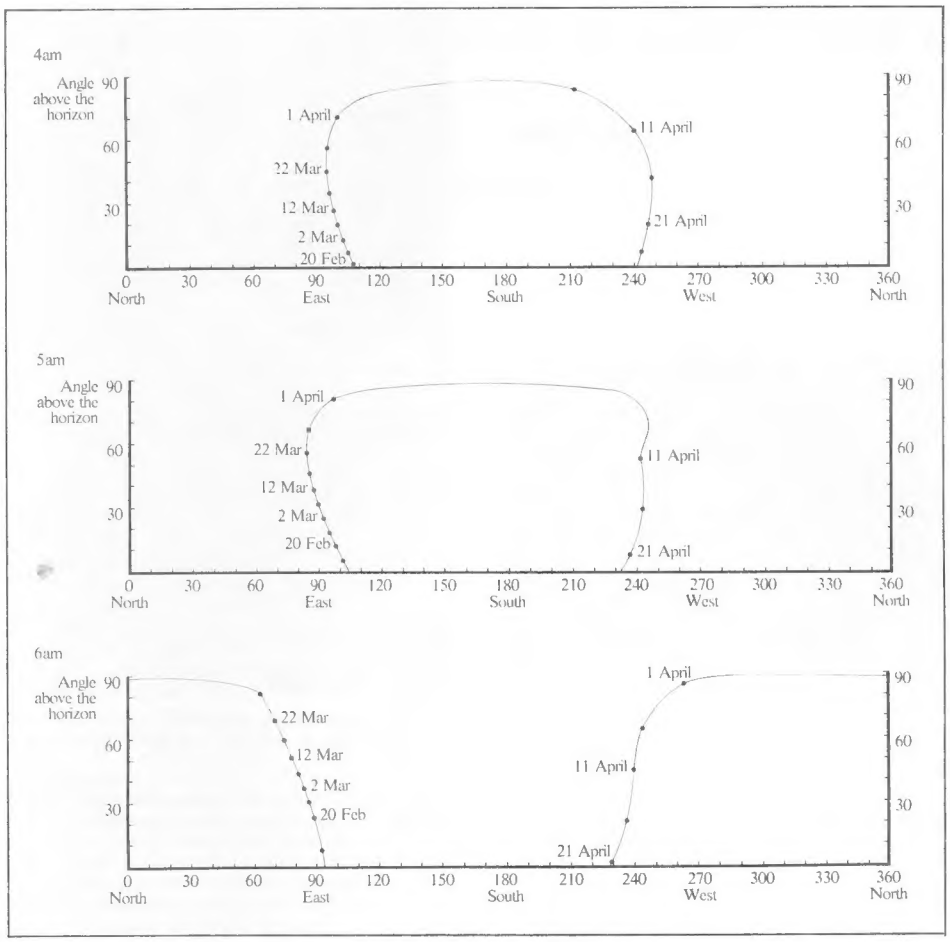
The Comets is now surrounded by a cloud of vapour and gas mingled with dust, forming the Comet's *coma*. This coma can reach nearly a million kilometres in diameter. Also two tails form — the *dust tail* formed when the rocky dust in the coma is pushed away from the sun, and the *ion tail* which consists of electrically charged molecules from gas in the coma.

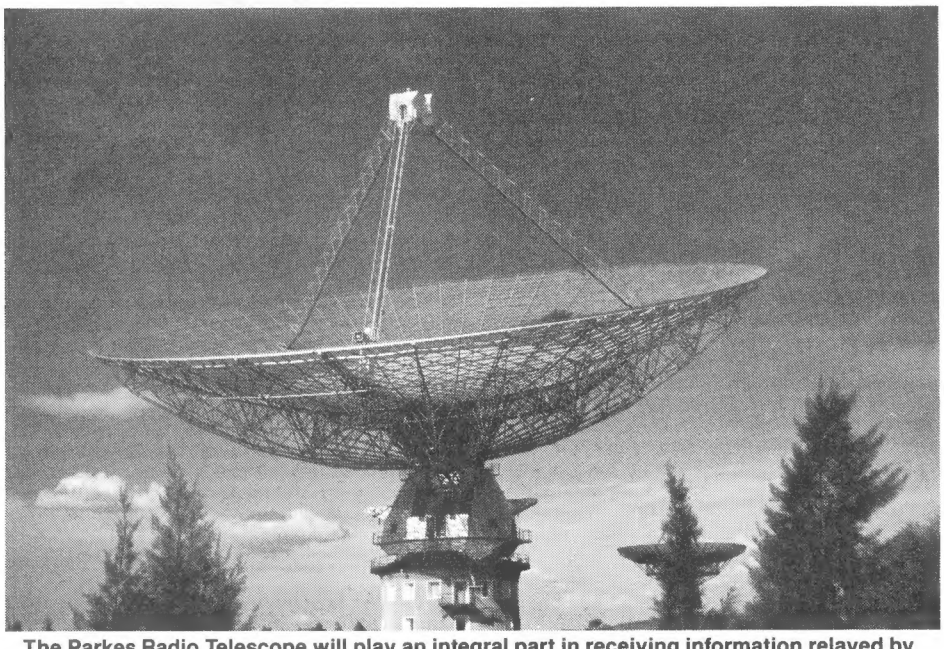
Usually these tails point in different directions, however, on this visit, it will be difficult to see them separately.

Each passage of Halley near the sun removes a one-metre layer of ice and dust from the surface of its nucleus. Most of the lost material is strewn along the Comet's track and the lightest particles are eventually pushed completely out of the Solar System. These particles stay spread along the track, with the result that when the earth passes through the dust trail twice a year, some of the particles enter the atmosphere, which in turn produce meteor showers. Halley's showers occur in early May (the Aquarids) and late October (the Orionids).

Halley's is only one of about 700 comets of which detailed information is known, but it is likely that 100 000 000 000 comets surround the sun in a vast cloud.

The Comet was first photographed in 1910. On this visit the earth passed very close to the Comet's tail and there were wild rumours that poisonous gases would have a disastrous effect. Some people plugged cracks in windows and doors to prevent the gases destroying them, whilst the more enterprising sold "comet pills" which would protect those





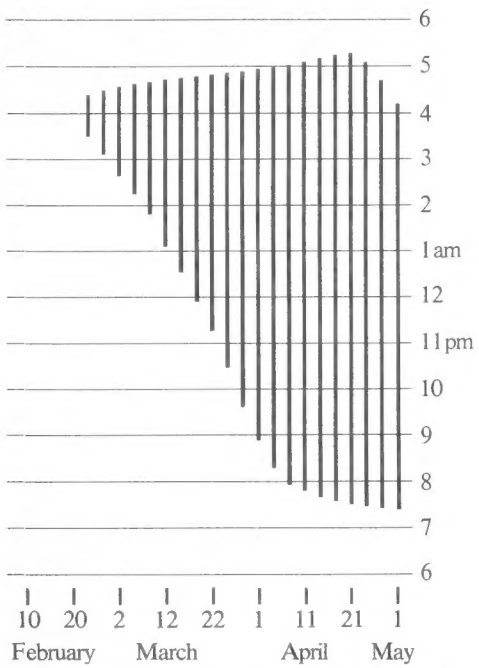
The Parkes Radio Telescope will play an integral part in receiving information relayed by the interplanetary probe *Giotto*.

who swallowed them from the effect of the Comet.

WHEN CAN WE SEE IT?

According to the explicit diagrams provided by Denis and Robin and reproduced with their consent, the figures for viewers in the southern states can be easily read. A few simple calculations for those people, in the northern states, who luckily enjoy warmer weather will indicate their window for a view of a sighting before another 76 years elapse.

When the Comet is closest to the earth on this visit, during this month, it will be three times further away than during its closest approach, in May 1910, it will therefore appear fainter than it was in 1910.



A graph indicating the time of night Halley's Comet will be in the sky.

The best time to view Halley will be during the second week of this month when it will be in the sky all night and the tail should be clearly visible and should not be affected by moonlight.

REQUESTS

It is requested that any unusual radio propagation or phenomena that is encountered during the sighting period be logged in UTC date and time and either forwarded to Denis or Robin, or to the writer who will gladly pass the information on to them to add to the scientific data that has already been received.

Another request is for anyone who sighted the Comet on its last orbit in 1910 and have seen it again to please advise the writer for publication so that it may be historically recorded for future generations.

THANKS

It would be impossible to list all who have contributed to this article but sincere thanks are extended to the staff of the Japanese Institute of Space and Astronautical Science, the Japanese Ministry of Education, the Consul for Japan and staff, NASA, ITU Magazine, Drs Robin Hirst and Denis Coates, the staff of the Museum of Victoria Bookshop and Ms Julie Lane of Quadricolor International. Sincere thanks to one and all and also those not listed.

AR

Edmond Halley (1656-1742).

TWO-RING HALO FOR SIX METRES

Bill Lochridge VK4WL
C/o Post Office, Thursday Island, Qld. 4875

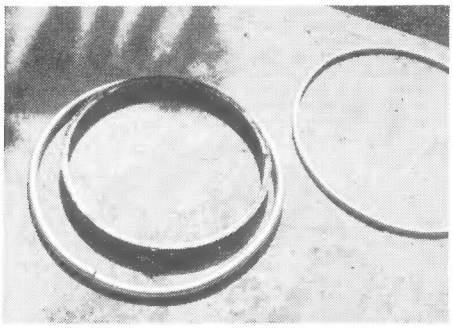
During 1984, I read a magazine article describing the construction of a single ring, gamma-matched halo antenna. From my experience, this configuration, although providing an excellent radiator, was restricted in its use by its very narrow-bandwidth characteristic.

In the late 50s, a six metre, three ring halo was available on the American market and covered the 50-54MHz band. This antenna had an outstanding SWR which did not exceed 1.8:1. The Saturn 6, as it was called, was robust, very good for trimming trees (when used mobile!), but, importantly, it remained in-tune. It was, however, quite expensive. Unfortunately, I cannot recall how it was fed. With this background, one of my novice students and I set-out to build a two ring halo.

The two ring halo is basically nothing more than a folded dipole bent into a circle, 508mm (20") in diameter, using capacitor plates at the open ends for tuning to resonance. A folded dipole has a feed impedance of about 300 ohms and to transform this value to 50 ohms, the upper ring is constructed of 20mm tubing, whilst the lower one is 8mm.

At this point, it is important to stress that in Cape York, northern Queensland, where the author lives, the nearest hardware store is about 800km away and the price of any item is three to four times greater than it would be in Brisbane. Fortunately, there is a very well-equipped rubbish-tip. Luckily, two 1.8m (6') lengths of 20mm and 8mm aluminium tubing were located there for about $11.50. Some 3mm plate was also found for the capacitor plates.

The next problem was to bend the tubing as there were no tree-trunks with a 508mm (20") trunk! A further search of the tip unveiled a 405mm (16") bicycle tyre-rim. One end of the tubing was crimped in a vice, the tubing was filled with beach sand (there is an ample supply of sand around Cape York) then the other end

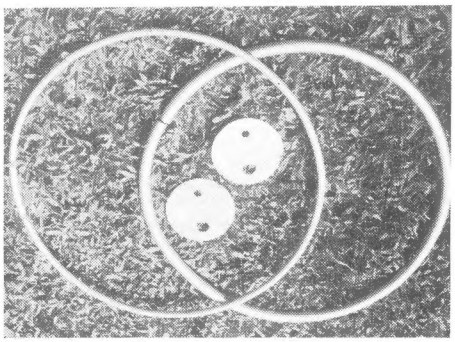


Halo Rings and the Tyre Rim which they were bent on.

was closed off, again with the aid of a vice. The tyre rim was then placed in the centre of the tubing and both were then clamped in the vice.

With the student on one end and the writer on the other the tube was bent around the rim, overlapping as far as was possible. When the tubing was released it sprang out to approximately the required size. (When one lives in the *bush* one learns to adapt!). All that remained to be done now was to pull the tubing apart to make a 508mm (20") OD circle and to cut and align the ends. (See photograph).

Two 114mm (4.5") capacitor plates were cut using a nibbler tool. The two tubes were set

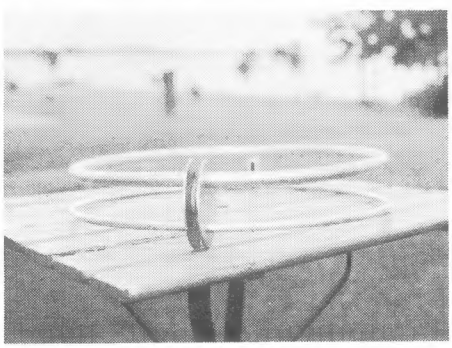


Rings and Capacitor Plates.

63.5mm (2.5") centre-to-centre and holes drilled through the capacitor plates to accommodate the 20 and 8mm tubes (see photograph). At this time five additional holes were drilled in the plates so that nylon nuts and bolts could be used to adjust the distance between the plates. Blocks were then taped between the plates to enable welding of the plates to the tubes by the local plumber for the princely sum of a "six-pack". The total cost of the antenna was $18.

All that remained to be done was to cut the small tubing for a feed-point and provide an antenna mount. The mounting block was constructed from a nylon cutting-board (also found at the tip). This block was cut to approximately 127 x 63.5 x 12.7mm (5 x 2.5 x .5"). The smaller ring was then cut to provide a 12.7mm (.5") gap opposite the capacitor plates. The ends were flattened, and drilled to accommodate mounting them on the nylon block and for the direct connection of the 50 ohm coaxial cable. The larger ring was drilled and similarly mounted to the block.

The remaining block area was used to attach the antenna to a mounting pole of larger tubing. This particular halo is mounted some three metres above sea level on the writer's catamaran and has proved its worth over a vertical antenna when working stations using horizontally polarised beams.



Capacitor Plates and Rings ready for welding. A matchbox, placed on its end, provided almost perfect spacing.

The six metre Halo mounted on *WINDROSE* and situated about 3m (10 feet) above the water.

Recently, during a voyage from Weipa to Thursday Island tests were carried out with Arthur VK4IR and Col VK4ACG, in Weipa and also Brian VK4ZTI, at Thursday Island. The contacts ranged from about 40km to 60km with good signals both ways. It should also be noted that I was running 2.5 watts whilst Arthur and Col were using 10 watts with two element beams — no preamplifiers.

From Jackson River, contact was possible with Brian, who was operating portable on Thursday Island with a whip on its side. Even from the north-west tip of Cape York VK4IR was Q3 and VK4ZTI was Q5. Not bad for a mobile antenna!

AR

QSP

THE TRIAL IS OVER

The trial for Jack Ravenscroft VE3SR, is over. Testimony was presented in January and observers felt the trial went well.

Jack, from Ottawa, was sued for $35 000 for allegedly interfering with a neighbour's microwave oven, furnace control and home entertainment equipment. During the trial, Canada Radio Relay League (CRRL) Director, Ray Perrin VE3FN, testified that Jack could not be held responsible for the interference. He compared the problem to rain entering a hole in the roof. There will always be rain. You have to fix the roof. The analogy was appropriate.

DOC personnel, who indicated that Jack's station was essentially clean and that Jack had been operating within the law, testified that even their own hand-held transceivers created problems for the plaintiffs' equipment.

The plaintiffs then produced a tape recording of a CW transmission copied on their home entertainment equipment. To their embarrassment it was not transmitted by Jack, but was a transmission by another amateur operating a block and one-half away!

From CRRL News

VHF ANTENNA TUNER

K England VK4TPE
31 Morgan Street, Rockhampton, Qld. 4700

Ever had your solid state VHF rig close down its finals because of an impedance mis-match at the antenna? Many amateurs use antenna tuners or transmatches on HF, but few use such devices on VHF.

A design for an antenna tuning unit (ATU) suitable for the 144MHz band was published in the British publication *HAM RADIO TODAY*, December 1983. Graham Packer G3UUS, in his article entitled *Wire Antennas on 2m — A practical Proposition?* suggests their use with G5RVs and wire antennas, including Rhombics, long wires and multi-wavelength loops, as well as the more conventional Yagi type antennas.

A tuner constructed by the writer for a little under $30 has matched a long wire, a half wave on 27MHz and two metre verticals. With some modification, it has also enabled matching of the wire and 27MHz antennas to 50 ohm feed impedance, at 52 and 53MHz.

Construction is simple and can be modified by the constructor for his/her particular needs and source of parts. The original design had a half-wave length of coaxial cable placed inside the box as a balun, but this can be placed externally as desired.

Some difficulty may be encountered in obtaining suitable air-gap capacitors. It is possible to reduce higher value capacitors by removing plates to obtain the correct value. Should larger capacitor values be used, the tuning will be sharper and will result in practical difficulties in obtaining and maintaining a correct match, even on smaller changes of frequency change.

The following parts are required:

One metal die-cast box — 150 x 80 x 50mm
Four SO239 or BNC sockets (consider Type N — Tech Ed)
Two insulated binding posts
Two PL259 or BNC plugs (consider Type N — Tech Ed)
600mm RG58U
Quantity of No 16 B & S enamelled copper wire (1.25mm diameter)
Two air-gap 30pF variable capacitors
Two knobs, screws, solder lugs, nuts, bolts, washers and pop-rivets

CONSTRUCTION — refer diagram

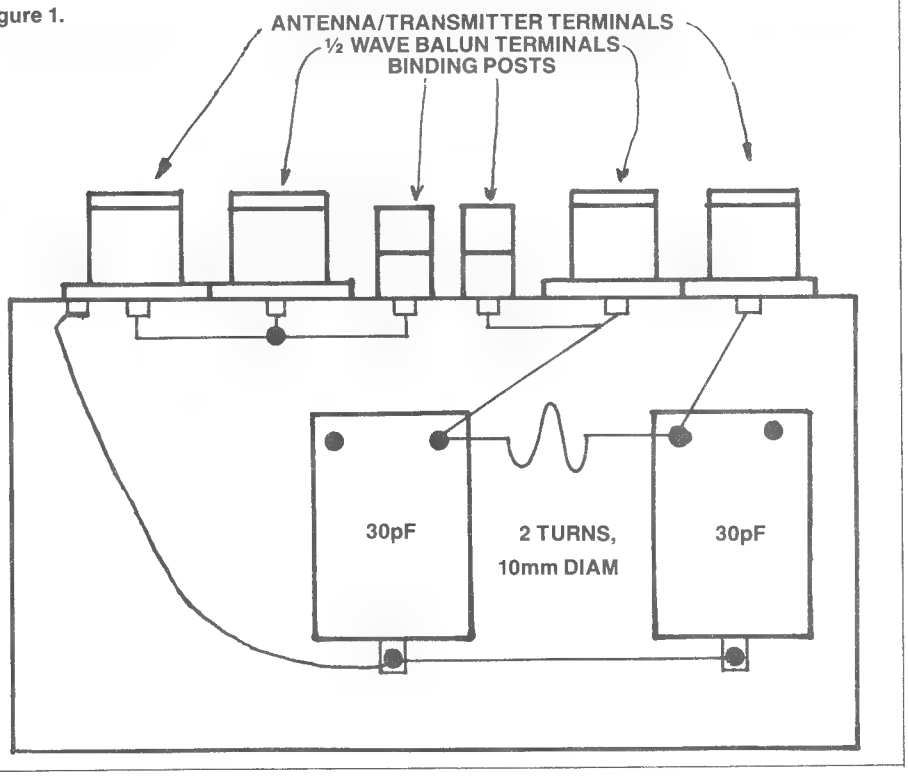
Mount all four sockets along one side of the box leaving about 15mm (0.6") between the second and third sockets for the two binding posts.

Pop rivets were used to attach the panel mounting sockets to the box on three of the four holes. The remaining hole used a nut, spring washer and bolt to securely ground the solder lug. Install the two binding posts between the sockets. Next, position and mount the two capacitors in such a way as to obtain the shortest practical length for the wire connections. The coil is placed between the capacitors consisting of two turns of B & S 16, 10mm in diameter spaced 5mm apart. Make up the balun using 600mm of RG58U.

The described version of the tuner used the lid as the base with the capacitor shafts towards the top. This is not critical and is dictated by the shape and size of the capacitors (the use of the box for continuous grounding for sockets and capacitors would be beneficial to reduce inductance paths — Tech Ed). Some expense in plugs and sockets could be spared if the balun were inside the box, however, it does make for a handy patch cable when the ATU is not in use. Make sure all solder connections are really sound and care is exercised so that solder does not encroach onto the capacitor plates.

A six metre version of this tuner required approximately 70pF capacitors and an inductor of eight turns 10mm in diameter. This version was not tested to finality owing to transmitter problems and as such, the values given may require some experimentation.

Figure 1.



OPERATION

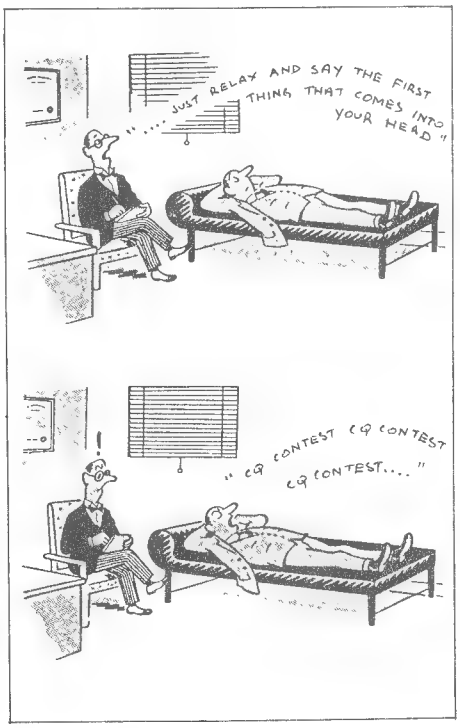
Initially, whilst you are getting the feel of things, reduce the transmitter output to the minimum necessary to obtain SWR meter calibration, *and connect a suitable dummy load.* Set both capacitors half in mesh. The capacitor settings are very interdependent and are varied in convention to tuning a HF version. Small changes in each will provide overall improvement until a perfect match is obtained. At this point, increase transmitter power to normal and re-adjust as required. (SWR meter diodes linearity typically cause this effect — Tech Ed).

After getting the feel of the tuner, connect your antenna and repeat as above. Open line feed balanced and unbalanced may be connected utilising the binding posts.

Small capacitors have been found adequate for two metres with 25 watts, but with higher powers larger capacitors will be necessary.

CONCLUSION

Whilst this ATU may not tune the *bed-springs* or the *back-fence,* it may allow the television antenna to serve another purpose.



Original cartoon from PUNCH magazine — adapted and contributed by Ivan Huser VK5QV

VOLTAGE FED LOOP ANTENNAS

David Robertson VK5RN
10 Milan Terrace, Stirling, SA. 5152

Such antennas have two feed points, both of which must receive the same power. Therefore, the impedance of the two feed points must be matched to the characteristic impedance of the delay line. This is so, whether the driven element is a loop or crossed dipoles. Circular polarisation can be generated by spacing the vertical and horizontal elements along the boom. A spacing of a quarter of a wavelength produces a 90 degree phase difference between the vertical and horizontal field components. A delay line is then not required and accurate matching is less critical. However, it is still necessary to ensure equal power flows to the two feed points so that the two feed point impedances must still be equal to one another.

The Quadraquad, as first described, was difficult to match to the delay line. Since then, I have developed a new feed system that is easy to make. It is a voltage fed system that is analogous to an end fed half-wave dipole. Many of us have used such antennas, particularly in portable work, and the usual way of feeding them is by means of a parallel tuned circuit with the antenna attached to the *hot* end and the coaxial cable tapped a turn or two up from the *cold* end of the coil.

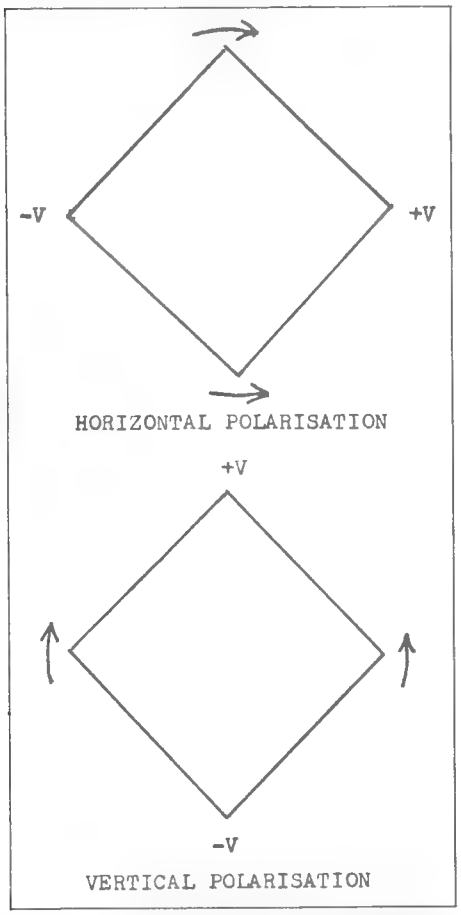


Figure 1 — Voltage and current distributions on a one wavelength quad loop. Current maxima are denoted by arrows and voltage maxima by +V and —V. The voltage and current maxima are separated by a time interval of a quarter of a period.

Figure 1 shows voltage and current distributions for a diamond configuration, one wavelength, quad loop. The universal way of feeding such a loop is to split it at a current maximum and then to feed current into the terminals. However, there is another way of doing this.

Voltage maxima occur at two points around the loop so that voltage feed can also be used without having to split the loop. Simply treat the loop as if it were a voltage fed long wire, as shown in Figure 2. At VHF and UHF use a quarter-wave coaxial transformer instead of a parallel tuned circuit.

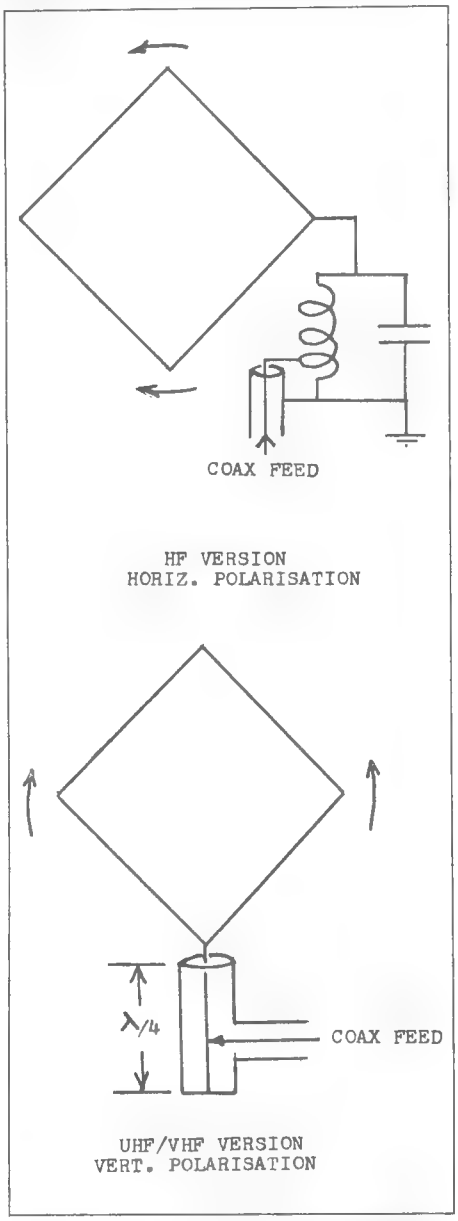


Figure 2 — Two methods of voltage feeding a one wavelength quad loop.

Quarter-wave transformers are easy to make. Use a length of copper or brass tubing for the outer, and some rigid wire or a rod for the inner. Diameters are not critical. For the outer I use 30mm (1.26") diameter tubing at VHF and 19mm (.75") diameter tubing at UHF. For the inner I use 10 gauge copper wire. Slot the outer for about half of its length with a hacksaw. Make the slot wide enough to insert the tip of a soldering iron so that the coaxial feeder can be soldered in place when the correct tapping point is found. Now solder a piece of sheet brass across the slotted end of the outer for a short circuit. Drill a hole for the inner in the centre of the shorting plate and push the end of the inner into the hole and solder it in place. The finished article is shown in Figure 3. The transformer is clamped to the cross arm of the quad and the inner is soldered to the corner of the quad so that it is now supported at both ends. No other support for the inner should be necessary, although I do use one insulating washer with appropriate drain holes in my VHF antenna transformers.

Figure 3 — A 145MHz ¼ Wave Transformer.

Matching the antenna to the feeder is now easy. To achieve matching, you always need two variables to adjust. In this case, one variable is the tapping point position. The inner of the feeder is slid up and down and is soldered to the inner of the transformer when the correct position has been found. The other variable, so far unmentioned, is top capacity loading. Make the quarter-wave transformer five percent shorter than an electrical quarter-wavelength so that some top capacitance is necessary to resonate it. The top capacitance consists of a piece of rigid wire or strip soldered to the transformer inner at its open end where it is also connected to the corner of the quad. Only one end of the strip is attached to the inner, the other end floats electrically free and its length is adjusted with a pair of side-cutters or tin snips. Put the VSWR bridge as close to the feed point as you can when making these adjustments. I insert the bridge into the feeder just behind the reflector.

By adjusting the tapping point and the capacitive loading in turn a perfect match can

The use if loop antennas for the generation of circularly polarised waves was described by Underhill, in 1976[1]. His loop was one and a third wave-lengths long. I re-invented the wheel in the form of the Quadraquad, in 1984[2]. The Quadraquad was based on a standard one wave-length loop.

be achieved in a few minutes. I invariably cut too much off the capacitor at first and have to replace it, but that is easy enough to accomplish. Make sure that the slot and the open end of the transformer slope down so that water will run out. I find that water runs straight through the transformer, without affecting it greatly, although there is a slight change in VSWR when it rains. This could be the result of water on the fibreglass cross arms.

In the diamond configuration of Figure 1, voltage-feeding of either side produces current maxima at the top and bottom and hence horizontal polarisation. Voltage-feeding either the top or bottom produces vertical polarisation. Feeding both the bottom and one side in quadrature produces circular polarisation provided that the two feed points receive the same power. When this double feed is used for circular polarisation, each feed point must be matched carefully to the characteristic impedance of the delay line in order to ensure equal power division. The two feed points are entirely independent so that it is not necessary to work back and forth from one to the other. Exactly the same procedure must be followed with crossed dipoles if you want to finish with reasonable circularity.

Most of us own VSWR bridges which are designed for 50 ohm coaxial line, so we are stuck with 50 ohms for the delay line. Thus, the main feeder sees 25 ohms at the tee junction with the delay line. So, there will be a VSWR of two on the main 50 ohm feeder.

You can either tolerate this, or you can make a 35 ohm quarter-wave coaxial transformer to remove it. I tolerated it with my VHF antenna, which is only used for receiving and boasts a mast head preamplifier. My UHF antenna has a home-made transformer with a characteristic impedance of 35 ohms. These complications in matching the main feeder are common to crossed dipoles where you meet exactly the same problems. Of course, in both cases, a 75 ohm VSWR bridge would make the game easy. A 75 ohm delay line, giving 37 ohms at the junction would be close enough to a match for a 50 ohm main feeder.

Figure 4 shows the business end of my UHF antenna. The two quarter-wave transformers are clamped to the cross arms and the 35 ohm matching transformer is strapped to the boom. There may seem to be a lot of ironmongery in the field of the driven element, but none of it is resonant at the operating frequency and it appears to have no effect on performance. The 35 ohm matching transformer consists of 16mm (⅝") internal diameter copper tubing for the outer and a piece of RG8 coaxial cable for the inner. The outer braid of the RG8 serves as the inner as its diameter is about 10mm (⅜"). The advantage of a voltage fed loop over a dipole is that it is an unbalanced system so that no baluns are necessary. You still have to adjust two parameters to match a dipole driven element. Of course, you can use a gamma match with a dipole, to avoid the balun, but they have a habit of unbalancing the beam and, even then, you have to adjust two parameters just the same. It is very easy to match a feeder to the voltage fed loop if you are only interested in a single feed point and linear polarisation. A few minutes of adjusting with the top capacitance loading and the tapping point will reward you with a near perfect match.

I, like many others, have found that whilst loops make excellent driven elements and reflectors, they do not work very well as directors. This is said to be because the mutual reactance between loops is of the wrong sign for directors. The best idea is to use loops where they work best — as reflectors and driven elements, and to use normal Yagi directors. I call such antennas **Quadraquagis** if they are circularly polarised, otherwise they are, of course, know as Quagis.

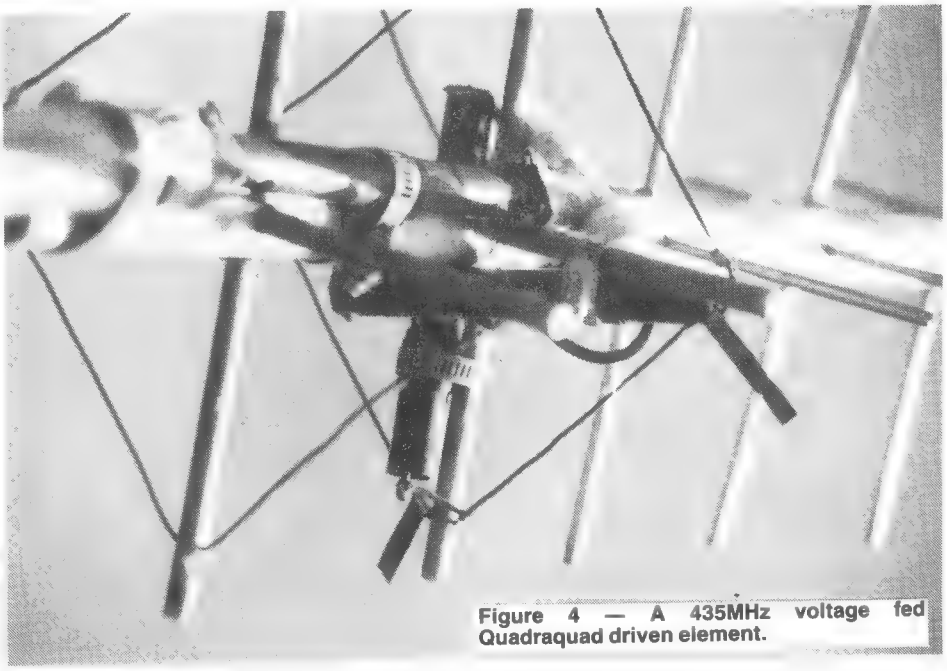


Figure 4 — A 435MHz voltage fed Quadraquad driven element.

The quarter-wave transformer has another advantage — as well as being a matching device, it is a filter, so that out-of-band interference is reduced. I find that my Yagi antenna on 145MHz is much more prone to interference from nearby television transmitters than is the Quadraguagi with its quarter-wave transformers. Of course, they are poor filters, but nevertheless they do reduce out-of-band signals which can overload receiver front ends.

I discovered a trick with delay lines. A quarter-wavelength in one arm and a half-wavelength in the other arm is perfectly in order, but it pays to use odd eighth wavelengths, such as one-eighth and three-eighths. There is a reason for this. If the two feed point impedances are resistive and equal, the power will divide equally even if the feed point resistance does not match the characteristic impedance of the delay line. This only happens for odd eighth wavelengths. This can be proved as follows:

The input impedance Z_1, of an eighth wavelength of transmission line of characteristic impedance Z_o, terminated by a resistance of R_t is given by —

$$Z_1 = Z_o [(R_T + jZ_o) / (Z_o + jR_T)] \text{ where } j = \sqrt{-1}$$

The input impedance, Z_2, of a three eighths wavelength of the same line terminated by the same resistance is —

$$Z_2 = Z_o [(R_T - jZ_o) / (Z_o - jR_T)]$$

Z_1 and Z_2 are the same, except that the imaginary parts are of opposite signs. Such quantities are known as complex conjugates. The impedances have equal and opposite reactances, one capacitive and one inducative. When Z_1 us connected in parallel with Z_2 at the tee junction with the main feeder the two equal and opposite reactances cancel out and the resulting impedance is purely resistive. It is given by —

$$Z_3 = (Z_o^2 + R_T^2) / 4R_T$$

So, the power divides equally because Z_1 and Z_2 have the same absolute values and, in addition, the impedance Z_3 seen by the main feeder is purely resistive. There is no particular virtue in having this purely resistive impedance at the junction unless it happens to match the characteristic impedance of the main feeder. It is the equality of power division that matters. This only happens if the two feed point impedances are equal and resistive.

This is likely to be approximately the case if the antenna is resonant, or nearly so. In any case, this property of eighth wavelength transmission lines is well worth using. I have used the idea in my UHF antenna, but not in my VHF antenna. I had not thought of the idea when I built my 145MHz antenna, which uses a quarter and half wavelength.

One final word of warning — the easiest way to get confused is to solder pieces of coaxial cable together to make junctions at UHF. I tried this at first to avoid the high cost of N connectors, particularly tee junctions. I wasted much time getting confusing VSWR results. Finally, I bought the necessary N connectors, including a tee junction and it was then plain sailing.

I have a crude, but effective way of estimating the equality of power-division between feeds. *Dare I say it?* I use a neon bulb! I feed about 50 or 100 watts to the antenna and move the bulb around the loop. When driven in the circular mode, loops have an unusual property. The voltage is constant at all points on the loop

so that there should be little variation in intensity as the bulb is moved around it, see appendix. For low power testing, use a field strength meter instead of a neon bulb.

References

1 The ip quad — a new versatile quad driven element. M J Underhill. Radio Communication September 1976, p664.
2 The Quadraquad — Circular polarisation the easy way. D S Robertson VK5RN. QST April 1984, p17.

Appendix

In Figure 5, V_1 and V_2, the two feed point voltages are of equal amplitude, but 90 degrees, or $\pi/2$ radians apart in phase.

Let V_o = peak voltage, then,

$$V_1 = V_o \sin\omega t$$

$$V_2 = V_o \sin(\omega t + \pi/2) = V_o \cos\omega t$$

At any point, P, a distance 1 around the loop from feed point 1.

$$V_1 = V_o \sin\omega t . \cos(2\pi l/\lambda)$$

$$V_2 = V_o \cos\omega t . \cos[2\pi(l - \lambda/4)/\lambda]$$

$$= V_o \cos\omega t . \sin(2\pi l/\lambda)$$

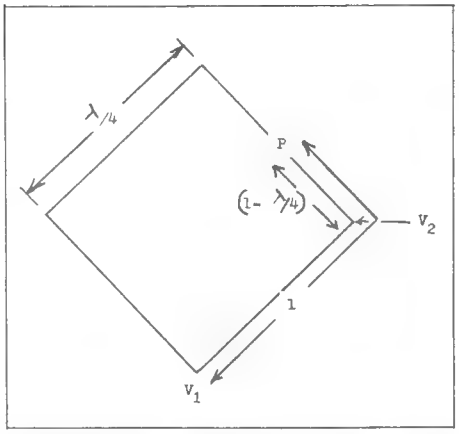


Figure 5 — Diagram for the calculation of the voltage distribution on a one wavelength Quadraquad loop. λ is the wavelength.

The resultant voltage, V at P is the sum of V_1 and V_2.

$$V = V_o \sin\omega t . \cos(2\pi l/\lambda) + \cos\omega t . \sin(2\pi l/\lambda)$$ or

$$V = V_o \sin(\omega t + 2\pi l/\lambda)$$

This is the equation for a travelling wave of constant amplitude V_o. The phase of the voltage varies with 1, the distance around the loop, but there is no variation in amplitude. A dipole supports a standing wave. There are voltage maxima at the ends and a current maximum in the middle. The Quadraquad supports a travelling wave. The wave travels around the loop so that the peak voltage and current are constant. It shares this property with terminated long wire antennas. The unusual feature of the Quadraquad is that it supports this travelling wave without requiring a terminating resistor.

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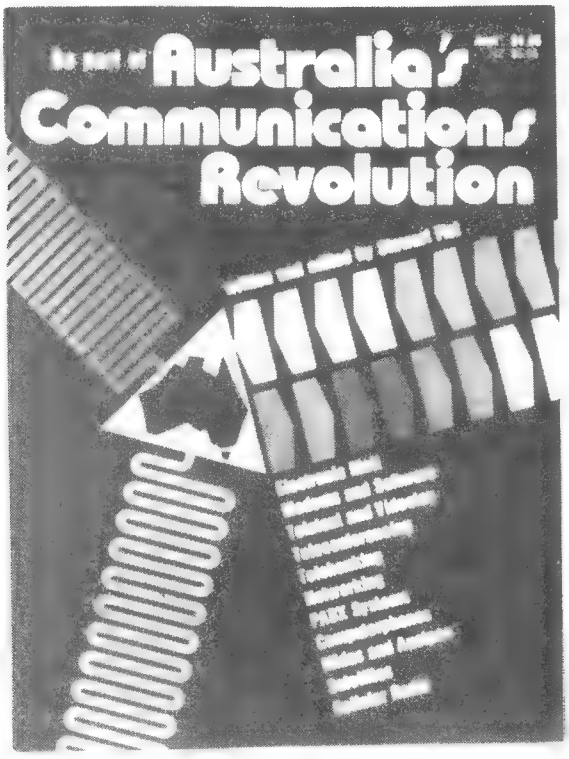

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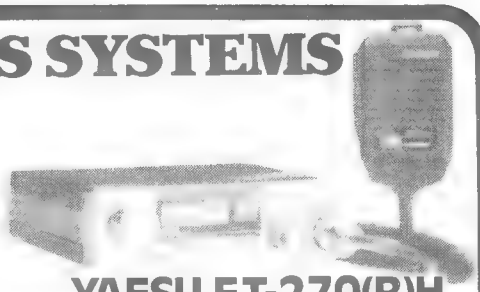

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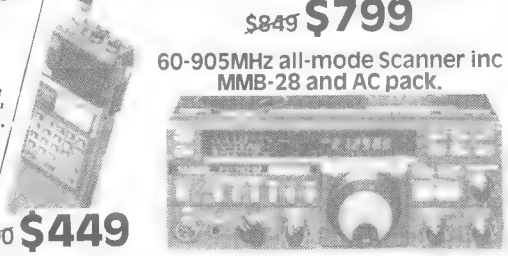

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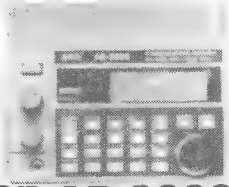

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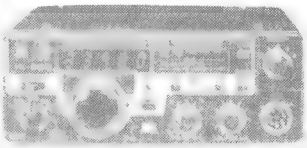

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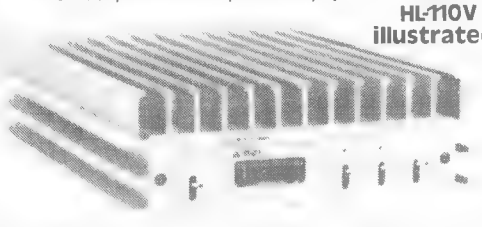

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DUAL LED LEVEL INDICATORS FOR USE IN RTTY TUNING AND OTHER FUNCTIONS

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This article describes a dual level indicator using LED bars as the output displays. Although originally built to be used as a RTTY tuning indicator, it can be put to many other uses as described later.

INTRODUCTION

Some time ago, I decided that I would like to be able to decode the RTTY signals, both commercial and amateur, that I could hear across the HF bands.

Since I did not own a usable micro-computer at the time, which seems to be the normal approach, but I did have a terminal (VDU), I built a totally hardware-based system. It was designed to be extremely flexible, being able to accept almost any shift and any known Baud rate in either Baudot or ASCII. The output of the box was 1200 Baud ASCII which the terminal would accept and display on the screen.

The whole project became an interesting, if not somewhat, drawn-out technical exercise of limited use since I now find that a large number of those signals do not conform to any of the common signal formats, or appear to be encrypted and therefore only print garbage.

However, whilst developing the decoder, I had reason to develop some peripheral items of equipment which have turned out to be more interesting, or useful, than the original project. The unit described here is one of them.

Anyone who has tried receiving RTTY signals on a tunable receiver quickly finds that some form of tuning aid is indispensable. My decoder incorporated buffered outputs from the tone filters to drive the X and Y inputs of an oscilloscope, so giving the familiar cross shaped display. I consider that this form of display is possibly the simplest, and most versatile display available since not only does it show correct tuning, but it can also show such things as multi-path, selective fading and presence of other tones. Many of these characteristics can cause either errors or complete lack of proper decoder operation.

After using the oscilloscope for some time I decided that I needed a simple, self-contained display that could be used to accurately tune the receiver and therefore free the oscilloscope for other work. Initially, it was thought that a solid-state version of the oscilloscope screen, using a LED matrix would make an interesting project. It very quickly became apparent that whilst being interesting, it would probably not be self-contained and definitely would not be simple or cheap. Finally, reason prevailed and I settled on a simple peak detector driving a LED bar-graph display for both mark and space channels to give desired results.

DESCRIPTION OF CIRCUIT

The circuit consists of two channels, one for the mark tone and one for the space tone. Each channel consists of a precision half wave peak detector using one half of a dual operational amplifier (uA/LM747) driving an LM3914 bar display driver which, in turn, drives a 10 LED bar display (or as described later, 2 x 10 LED bar displays.). Figure 1 shows the complete circuit.

Since both channels are identical, only the operation of one channel will be described in detail. The component identification in the description will relate to the channel called the *MARK* channel.

PEAK DETECTOR

The precision half wave peak detector uses an operational amplifier and other components, in addition to the normal expected diode. The advantages offered by this additional complexity is the improved detector linearity and the effective elimination of the detector threshold effect caused by the diode forward voltage drop.

In more detail, the operation of the peak detector is as follows:

The input signal to the detector is AC coupled through C1 and R1 to the inverting input of the operational amplifier (half of uA/LM747). The output of the circuit can be defined as the point from which the feedback resistor (R_2) is driven, in this case, the junction of R_2, C_2 and D_2. The closed loop gain (ie the gain from the input of the circuit to the output) is defined as the ratio of R_2 to R_1.

ie $A_v = -R_2/R_1$ (for the inverting input

In this case, R_2 equals R_1 so the closed loop gain is —1. Because diode D_2 is within the feedback loop, its forward voltage drop (when conducting) can be considered to be divided by the operational amplifier open loop gain. Here the open loop gain is in excess of 100 000 at low frequencies so the diode forward voltage drop can be considered to be effectively zero. Therefore, in this circuit, the diode still operates as a diode, albeit a perfect diode with essentially no forward voltage drop.

On the negative cycle of the input wave-form capacitor C_2 is charged to a positive voltage equal to the peak of the negative signal. As the input signal then goes positive, diode D_2 turns off, isolating C_2. The discharge time of C_2 is determined by the value of VR1 in parallel with R_2. The time constant of the R, C_2 combination is long compared to the audio frequencies involved but short compared to the length of the mark signal so that the output voltage reflects the presence or absence of the mark signal.

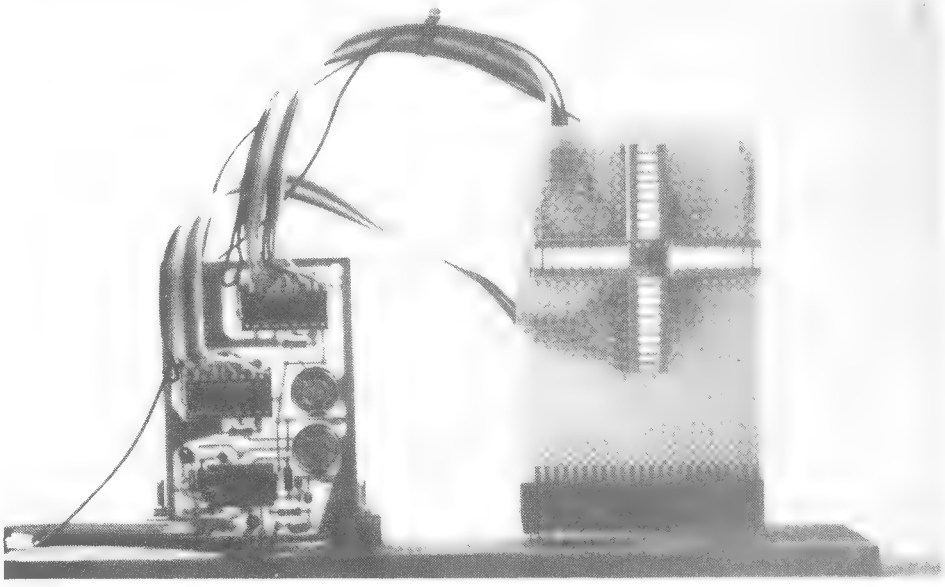
Diode D1 is included in the circuit to provide an alternate feedback path around the amplifier on the positive half cycle of the input signal when diode D_2 is turned off. If no feedback path is provided, the amplifier is operating open loop and could either permanently latch up or at least be a little slow to recover on the next negative cycle.

The input impedance of this circuit is defined as the value of R_1 and obviously stays constant throughout the entire input cycle. In this case, R_1 is 10 kΩ. It is possible to raise this up to 100 kΩ if increased input impedance is required. Just remember to change R_2 as well to maintain the correct ratio. It is also possible to alter the ratio of R_2/R_1 which will give the detector gain, ie if $R_2/R_1 = 10$, then the output will be 10 volts for one volt of peak audio input.

DISPLAY DRIVER

The LM3914 is one of a family of integrated circuits which senses an analogue voltage and drives an array of at least 10 LEDs with a particular relationship between the input signal and display. In the case of the LM3914, the relationship is a linear one. The device can be made to display either a single moving dot or a complete bar-graph, by connecting the *MODE* pin (pin 9), either to supply or leaving it open circuit.

The integrated circuit contains its own internal adjustable reference and an accurate



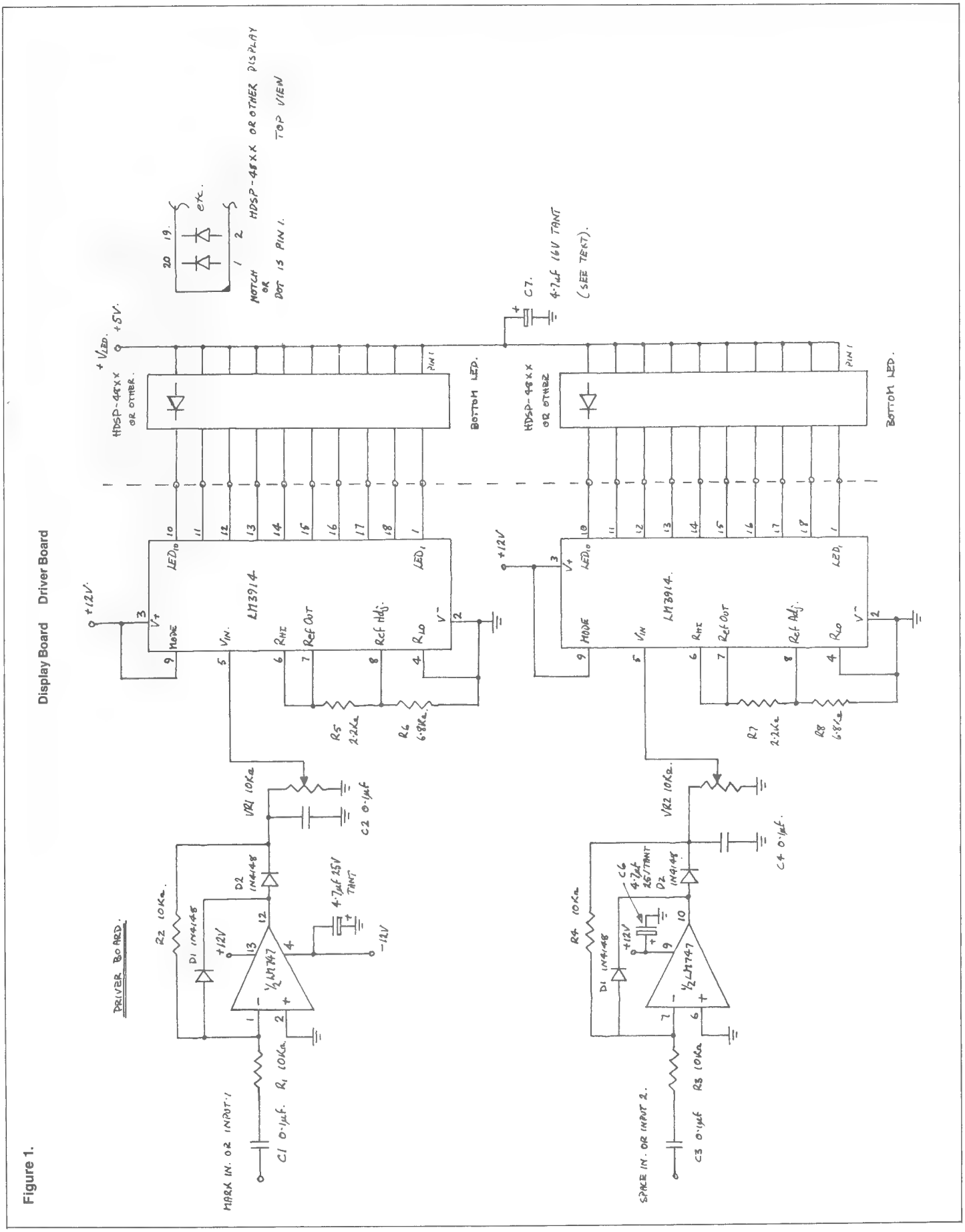
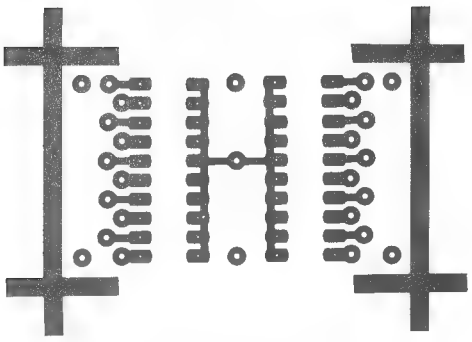
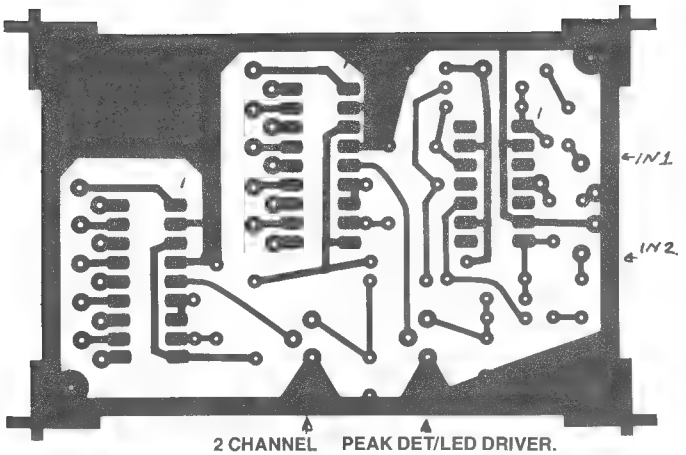

Display Board Driver Board
HDSP-48XX OR OTHER DISPLAY
TOP VIEW
NOTCH OR DOT IS PIN 1.
HDSP-48XX OR OTHER
BOTTOM LED.
PIN 1
+VLED.
+5V.
C7. 4.7µF 16V TANT (SEE TEXT).
LM3914
+12V
-12V
VR1 10KΩ
VR2 10KΩ
R1 10KΩ
R2 10KΩ
R3 10KΩ
R4 10KΩ
R5 2.2KΩ
R6 6.8KΩ
R7 2.2KΩ
R8 6.8KΩ
C1 0.1µF.
C2 0.1µF
C3 0.1µF
C4 0.1µF.
C6 4.7µF 25V TANT
4.7µF 25V TANT
D1 1N4148
D2 1N4148
½ LM747
MARK IN. OR INPUT 1
SPACE IN. OR INPUT 2.
DRIVER BOARD

Figure 1.

Figure 2 (both channels)



Dual 10 Segment LED Displays.



2 CHANNEL PEAK DET/LED DRIVER.

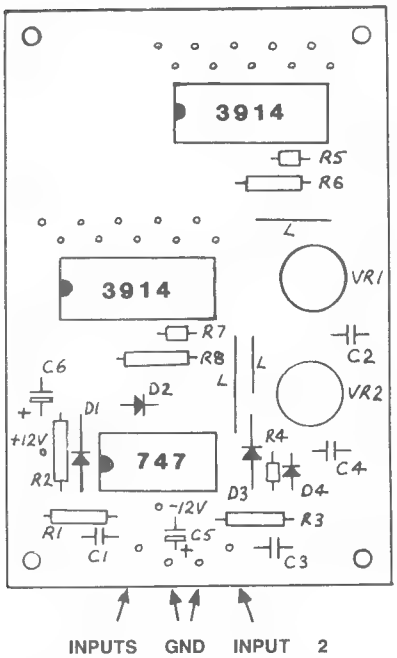


Figure 3 — Dual 10 LED Bar-graph Component-Side Layout.

10 step voltage divider. If the reference voltage is connected to the "high" end of the voltage divider whilst the other end is grounded, the circuit will light none of the LEDs in the bar when the input voltage is zero and all of the LEDs when the input is equal to, or greater than the reference voltage.

The reference voltage may be adjusted by varying the ratio of resistors R_5 and R_6. This relationship is described by the equation:

$$V_{REF} = 1.25(1 + R6/R5)$$

In addition to adjustment of V_{REF}, the current drive to each of the LEDs in the bar may be adjusted by varying R_5 in the relationship.

$$I_{LED} = (12.5/R5)\ mA \quad (R_5 \text{ in } k\Omega)$$

Therefore, it can be seen that the LED current must be defined first so that a value for R_5 can be set. A suitable value for R_6 can then be found by setting V_{REF} equal to the maximum input voltage required.

The current drawn by the LEDs must be a compromise between adequate brightness and reasonable current consumption. The figure chosen for this circuit is about 5mA.

Therefore if:

$$I_{LED} = 12.5/R5$$

$$R_5 = (12.5/I_{LED})\ k\Omega$$

$$R_5 = 12.5/5 = 2.5\ k\Omega$$

A close preferred value for R_5 is 2.2 kΩ which gives I_{LED} equal to 5.7mA.

Since the audio voltage level available from the tone filters in the RTTY demodulator was relatively high, the voltage level for the maximum height display was set to about five volts.

If $V_{REF} = 1.25\ (1 + R6/R5)$

$$R_6 = R_5\ (V_{REF}/1.25 - 1)$$

If V_{REF} = **5.0 volts** and

$$R_5 = 2.2\ k\Omega$$

$$R_6 = 2.2\ (5.0/1.25 - 1)\ k\Omega$$

$$= 6.6\ k\Omega.$$

The nearest preferred value is 6.8 kΩ. This gives a V_{REF} of 5.11 volts. The precise value of V_{REF} is not important in this case because only a relative indication is required and VR1 can be used to trim the input voltage to match the actual V_{REF}.

LED DISPLAYS

The HDSP-48XX displays produced by Hewlett-Packard were used in my unit. They are not too difficult to get and are available in a wide selection of colours. The full part numbers, plus some alternatives are described in more detail in a later section.

This form of display device is not absolutely necessary, but does give a very compact, neat-looking display. A display made up of individual LEDS can be used if they are cheaper, or easier to use.

VOLTAGES

The supply voltages used are ± 12 volts for the main board and +5 volts for the LED supply. These values were dictated by their availability from the decoder unit.

The supply voltages for the LM747 and LM3914s are not critical and may be anywhere from ± 9V to ± 15V.

The supply voltage for the LEDs should be as low as possible. They could use the same supply as the LM3914, but when this is around +12V, the IC package can get very hot with all LEDs turned on. This occurs because the LM3914 drives each LED with a fixed current, independently of the supply voltage. The voltage difference between the supply and the forward voltage across the LED therefore appears across the driver circuitry. Ohm's Law says that the power dissipation can mount up rapidly with up to 10 LEDs being driven. A supply voltage of +5V for the LEDs is usually available if logic is used and results in a cool-running IC. The precise voltage is not really critical.

CONSTRUCTION

The circuit construction is quite straight forward. I have used a printed circuit board for the detectors and display drivers and a separate aboard for the two displays. Figure 2 shows the full-size copper side layout for both boards. The two boards are connected together by two 10 wire ribbon cables. This approach allows the displays to be mounted behind the front panel in the minimum space possible whilst the other circuitry may be mounted in any convenient location.

Figure 3 shows the component layout on the main printed board. One thing to note about the layout is that some resistors and diodes are mounted flat on the board, whilst others are mounted vertically where room did not permit otherwise. The lines with the letter **L** beside them are wire links. The display printed board is simple and no layout is really possible apart from deciding which end is top or bottom.

One important component which is shown on the circuit but is not allowed for on either board is C7. The circuit will work (or appear to) without this capacitor. However, when tuning across the band with this circuit being driven by the receiver output, you may suffer from rather odd QRM. This is caused by the LM3914 oscillating on peaks when driven. These oscillations are quite wide band! In theory, this capacitor should go from the positive supply side of the LEDs back to the LM3914 ground (pin 2). In practice, this is not usually possible, so I have wired directly from the supply terminal on the display board to the nearest ground point. This seems quite effective in stopping the oscillations.

While building a second unit, it occurred that it would be interesting to extend the display to a cruciform shape to see if it offered any advantages. It is very easy to do by arranging a cross pattern of four displays and wiring the opposing LEDs in series. The modified display circuit is shown in Figure 4. Because the LEDs are in series, there is no more current drawn from the supply. Under these conditions, the LED supply voltage can be higher than for single LEDs. Figure 5 shows the prototype cross display and the driver board.

The advantages of this form of display are that the LM3915 runs a little cooler under full load because of the series LEDs and that it looks quite good — especially if the two bars are different colours. The disadvantages are that it costs more and takes up more space. Another use for this form of the display was suggested when the other members of the family saw it running on the bench, although I really think that a multi-coloured, animated star on top of next years Christmas tree is going just a little bit far.

TESTING

After both boards have been wired and

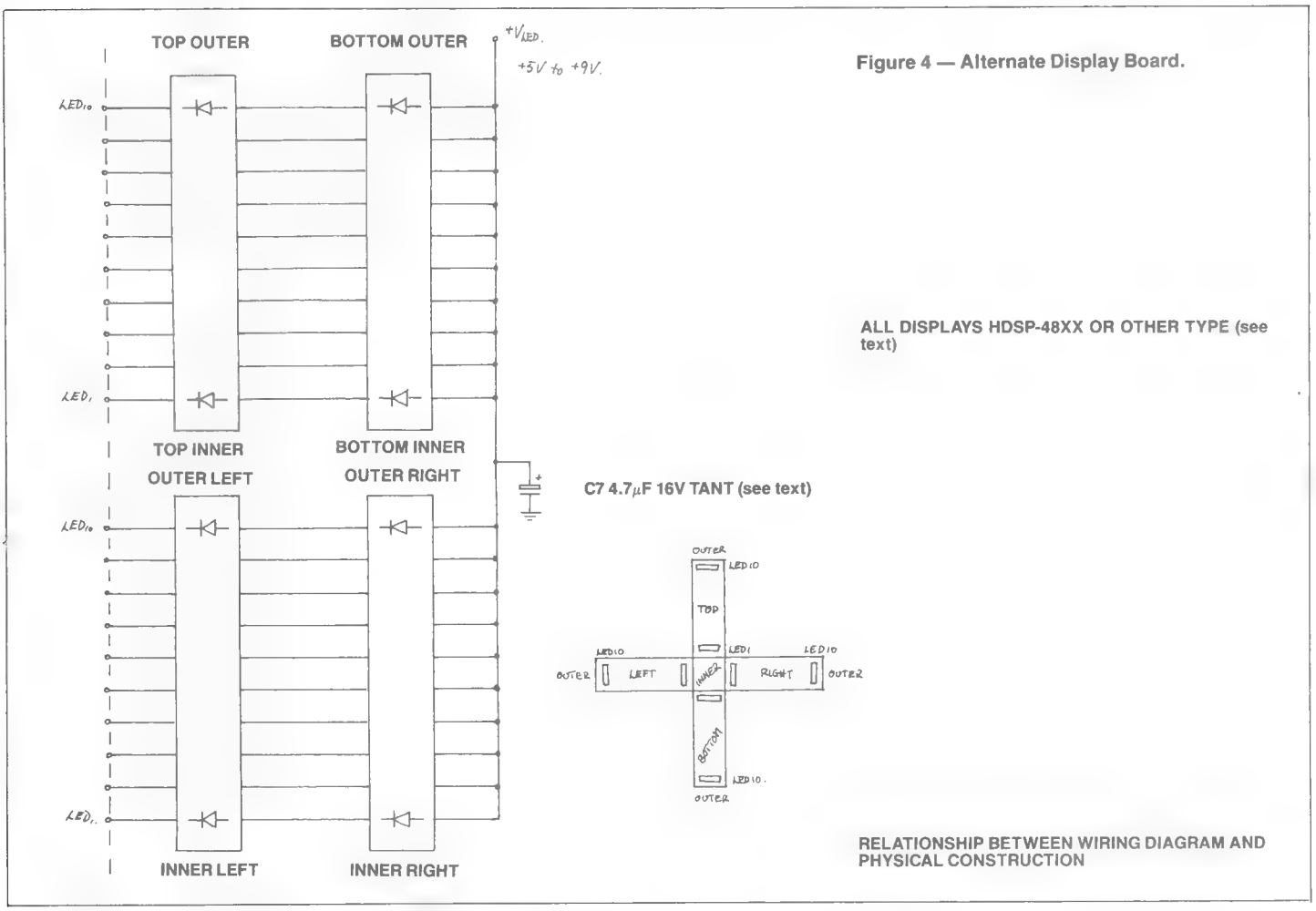


Figure 4 — Alternate Display Board.

connected with the ribbon cables, it is a good idea to look for missing links, in soldered joints and swapped ribbon wires. If all looks correct, apply power.

With power applied and VR1 and VR2 at maximum settings, apply a variable amplitude audio source to each input in turn. Slowly increase the signal level from zero and watch the LED bar switch on in even steps. If any LED lights out of sequence it means that the interconnecting cables are not wired correctly. After this test, set the audio source to the maximum level required and adjust VR1 or VR2 until the top LED just turns on.

This completes testing and the unit is now ready for use.

COMPONENT AVAILABILITY

Most of the components used in this circuit are readily available (at least in Melbourne), with the LED bars possibly being the hardest to find.

If you are in the position to do so it is a good idea to shop around. I found, when buying the LM3914s, that the price varied by almost 100 percent between different dealers that I frequent.

The Hewlett-Packard displays are available from VSI Electronics (Australia) Pty Ltd, who have offices in a number of cities. They have a minimum order of $20 but buying four of these displays will be just over this, so that should be no problem. I have used the HDSP-4830 (Hi-Efficiency Red) and HDSP-4840 (Yellow). There is also the HDSP-4850 (Hi-Efficiency Green) and HDSP-4832 or 4836 (Multi-Colour) for those who want all three colours in one display.

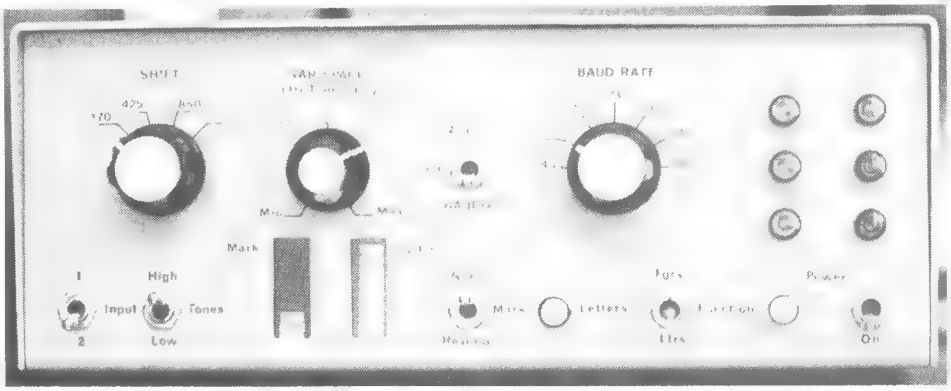
The MV57164 LED bar is manufactured by General Instruments and was brought in Melbourne some time ago. I do not know if it is still available.

Another possible supplier of LED arrays is Radio Spares Components who have outlets in a number of cities also. The relevant description in their recent catalogue is a *"10 bar DIL array"* and is available in red and green. I have not tried them, but the picture in the catalogue appears similar to the MV57164.

OTHER USES

Although the circuit described here was built for one purpose, it can, of course, be used for many other requirements where one or two level indications are needed. The type of peak detector used allows low level signals to be measured without the normal diode threshold effect and it can be built with gain also. If the peak detector is bypassed, the LM3914 can be used as a straight level meter. I have used a similar circuit for an S-meter in a receiver.

As stated previously, the LM3914 is only one of a family of display drivers that are available. The LM3914 exhibits a linear relationship between input and the display described before. The LM3915 exhibits a logarithmic relationship between input voltage and the display, with each LED representing a 3dB increase in level. The LM3916 exhibits a similar logarithmic response modified to give a VU characteristic. Therefore, the LM3914 and LM3916 are more suitable for use where indication of wide level variations is required, such as for audio or speech level indicators. The information given in the National Data book is quite detailed with many possible applications described. The printed board and display described here should work with any of the other devices. **AR**



This is not a heresy on established matching principles but rather a re-arrangement of the facts to allow a VFO to cover the band.

Bill McLeod VK3MI
42 Capon Street, Chadstone, Vic. 3198

MIS-MATCHING FOR EXTENDED BANDWIDTH

The finicky transmitter that requires no greater than a 2:1 VSWR from its nominal 50 ohms implies that any load from 25 to 100 ohms would be satisfactory. Therefore, matching it to a 50ohms load rising in a complex manner either side allows only half of the available range to be used.

Why not match it to 25ohms at antenna resonance for a rising characteristic, or alternatively, to 100ohms with an inverted impedance characteristic? Then, look at the HF coaxial feeder, which is almost never a "flat" 50ohms. Indeed, it requires a large suburban block, that contains five or more wave-lengths of feeder to flatten the VSWR curve, even at 28MHz! It is better to cut it for a multiple of a quarter wave-length for a reliable estimate of results at the transmitter end, and also to provide the matching.

Of course, the antenna, particularly for 80 metres, is usually a half-wave dipole of low height (10m or less), with a bandwidth around five percent of resonant frequency (for 2:1 VSWR) and a mid-band impedance about 55ohms. Only at the mid-band frequency can a random length of 50ohms cable be successful.

Now consider the quarter-wave transmission line transformer[1 & 2]:

a It transforms the load impedance across its Zo by the square of the ratio between the two.

b It inverts the load impedance characteristic over the bandwidth from a ***u*** *shape to an* ***n.***

c It transposes reactance from L and C and vice-versa.

d Only half of the total Load/Source VSWR shows at each end. (More accurately, the root of the ratio).

With a quarter wave-length of 72ohms cable (UR70) a 55ohms antenna can be inverted and transformed for the transmitter to see 94ohms at mid-band, falling away each side down through the nominal transmitter 50ohms for the bandwidth to increase by a useful factor of 1.5! This can be further increased to a factor of 2 by compensating the capacity mis-match at the antenna junction.

The compensation required for the quoted example of 55/72ohms is 300pF at 3.65MHz, consisting of the difference between the total capacity of the quarter wave-length of cable actually used, (920pF for UR70 at 69pF per metre) and that of a similar notional cable matching the antenna (1220pF for 55ohms). This value is not critical and can be varied by 30 percent, or more, to adjust the lowest VSWR point two or three percent for convenient system corrections.

The capacitor can consist of an open stub of the same cable, cut for the required capacity (4.5m of UR70) taped to the feeder, or a fixed mica capacitor of suitable voltage rating (250V, or higher) depending on arrangements for water-proofing at the antenna centre.

For those with a transmitter sited more than 13 metres from the antenna there are two alternatives. One is to use a three- quarter wave-length of 72ohms cable with any excess stored in the rafters. The other is to extend the antenna centre for the first quarter wave using a matching cable (52ohms/UR43), then transform with a further quarter wave of 37ohms cable. (Yes! the first quarter wave did that inversion trick even though it may not have transformed very much). Therefore the nest quarter wave must do BOTH for the transmitter to see 25ohms at resonance rising through the nominal 50ohms on either side.

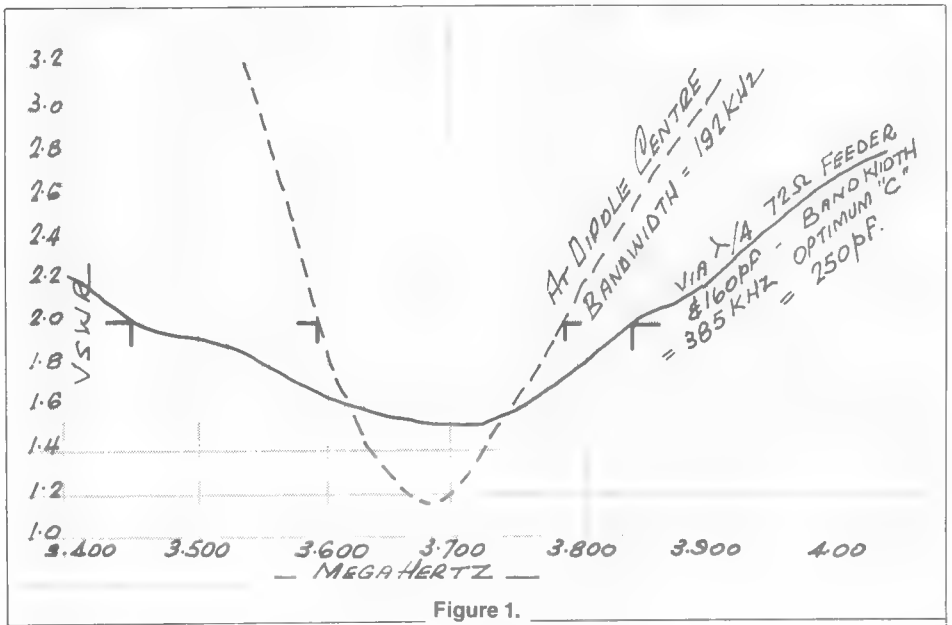


Figure 1.

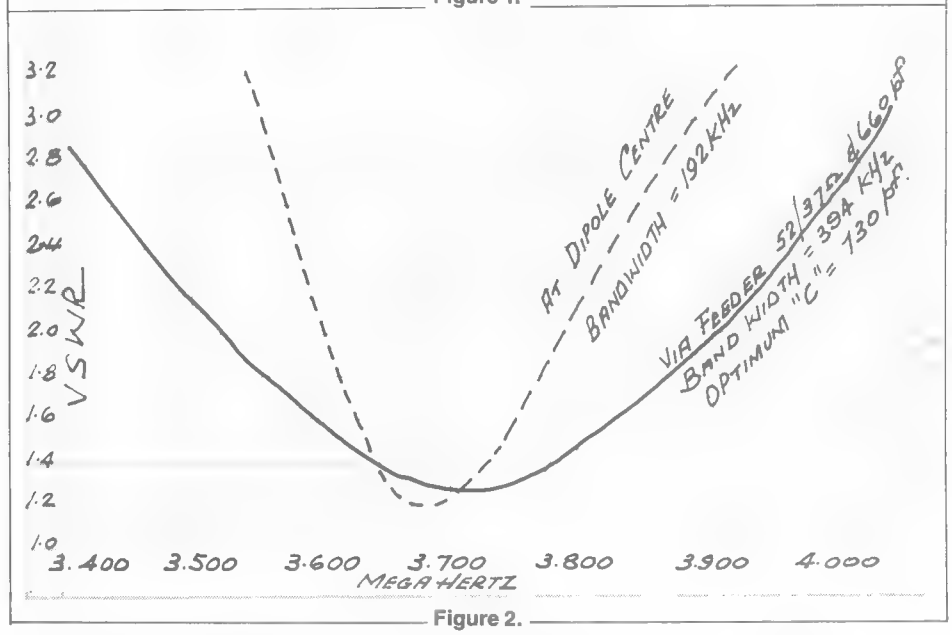


Figure 2.

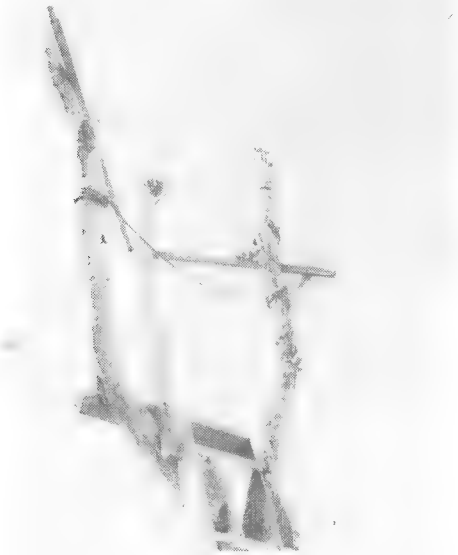
If RG83 cable (35ohms) is available, it may be convenient with RG8 (50ohms), but 37ohms also can be simulated using two lengths of 75ohms in parallel. Otherwise, it can be manufactured by tape-lapping the insulation of "Teflon" insulated shielded equipment wire for a D/d ratio of 1.8[2] and a capacity of 144pF per metre.

Using this arrangement the compensation of 730pF value is required at the 52/37ohms junction of the cables and is probably more convenient as a 680 or 820pF mica capacitor than a 5.4 metre stub.

In conclusion, it is possible to achieve 11 percent (400kHz) of bandwidth on 80 metres (see Figure 1 and 2), and can dispense with the ATU which possibly swallowed up 20 percent of the power, anyway. If it did, we may as well connect a 270ohms power film resistor (of

sufficient wattage rating) across the antenna for the same result.

A transmitter tolerating 2.5:1 of VSWR could cover the whole of the Region 2 (USA) 500kHz on 80 metres. Alternatively, a *thick wire* dipole of, say, cheap coax outer braid could also cover this bandwidth with an VSWR below 2. However, for impedance around 45ohms the better first quarter wave transformer choice is probably the European 60ohms coaxial cable, which is not available here.



Footboard and Safety Rails are convenient additions to this dead tree aerial for testing. The tree is conveniently placed in the centre of the 80 metre dipole!

The same system can be applied, depending on suitable cable availability, for all other bands and most single band antennas, verticals or Yagis, to extend the bandwidth. Of course, it cannot apply for multi-band trap dipoles where, on the next harmonic frequency, the quarter wave transmission line undergoes a metamorphosis to a half-wave.

REFERENCES:

1 Radio Communications Handbook (RSGB)
2 Radio Data Reference Book (Jessop, G6JP)

AR

DISASTROUS TRIP

Hans Rueckert, SWL
Lord Howe Island, NSW. 2898

Rudi Meuller DJ5CQ, VK9NM/LH, and since the 4th December 1985 VK9LM, arrived on Lord Howe Island in September 1985, for his second expedition to the region, with the intention of making as many DX contacts as possible. However, Rudi had no knowledge of what life had in store and met with a series of unfortunate mishaps during his stay.

Rudi stayed with a fellow countryman on the Island and managed to make in excess of 12 000 contacts on all bands, on both CW and SSB. His real challenge, however, was to work on the 80 metre band.

With a two-element beam installed for the 10, 15 and 20 metre bands and a vertical ground plane for 40 metres things were going well. After about two weeks, Rudi was eager to try his 80 metre delta-loop and climbed a 20 metre tall pine tree to install it. Next morning the antenna was on the ground, brought down by a severe storm — Rudi was to install five more 80 metre antennas including a dipole and an inverted Vee.

On 6th November, Rudi complained of feeling unwell but, as he was 20 000km away from home and family, was reluctant to see a medical practioner, but by the 9th November he was so bad that he had to be forcibly taken to see the local doctor, who also happened to be an amateur, Ken VK9LK. Ken diagnosed a serious illness which required emergency treatment.

A RAAF medical team, complete with operating theatre, four doctors and staff arrived from Sydney at 1am on 10th November in a Hercules aircraft. Within one hour, the medical team had set up in the three bed hospital on the Island, and performed a life- saving operation on Rudi. He was then taken with them back to hospital in Sydney.

Rudi required nearly four weeks recuperating in Sydney, the first 11 days in hospital, the balance staying with Manfred VK2BZW. It is true to say though, you can't keep a good DXer off the air as Rudi was frequently heard talking on Manfred's mobile station from the parking area of the hospital. He returned to LHI on 5th December, and once again repaired his 80 metre antenna.

However, with only 80 watts on his TS-820, he only managed to contact the occasional JA or W station, and although he could hear Europe he only contacted five OH, one I, three SM, one OE and one YU stations.

Rudi and Manfred during Rudi's sojourn at a Sydney hospital.

On 6th January, disaster struck again when Rudi received word from Germany that his mother had been admitted to hospital with a serious illness and his wife had met with a minor car accident on the icy roads whilst returning from the hospital.

But worse was to come. On the 8th January, Manfred VK2BZW, called to inform Rudi that the building which housed his home-base, DJ5CQ, had burned to the ground and was completely destroyed.

The irony of Rudi's sad saga was, after giving 30 000 stations Lord Howe Island during his two expeditions to the Island, Rudi received a call from his station only 12 hours before the fire. A young German amateur was operating from Rudi's shack in Germany so Rudi could hear what his equipment sounded like on Lord Howe.

Rudi's QSL information for the expedition is to his home address, Alter Main 23, D8601 Ebing-Bamberg, West Germany.

AR

Picnic at Seventeen Mile Rocks

Can this be the oldest VK4 group-photo to survive the ravages of time?

This gathering of experimenters (amateurs), their families and friends (approximately 36 in all), was taken on the occasion of the First Annual Picnic of the Queensland Wireless Institute held on the 19th March 1922, at Seventeen Mile Rocks, located on the Brisbane River. The motor launch JOYCE was hired for the occasion.

The only person known to this writer is A E Dillon, seated on the extreme left and wearing a hat. *Who are the others? ? ? (Can any readers help?).*

Contributed by Alan Shawsmith VK4SS

QSP

ENDANGERED LIVES

A CB operator was recently fined $2 500 in the Cairns Magistrates Court for making false distress calls by CB radio and in so doing, endangered the lives of others on many occasions.

Contributed by Lawrie White VK4FJC. Reference material the Cairns Courier Post, 23rd January 1986.

Novice Notes

REFERENCES

Power MOSFET Transistor Data — Motorola.
Solid State Design — ARRL.
Practical RF Design Manual — DeMaw.

I would be very interested to receive your comments on this, and any other project that you would like to see appear in this column.

Drew Diamond VK3XU
Lot 2, Gatters Road, Wonga Park, Vic. 3115

FOUR-WATT CW TRANSMITTER FOR 80 METRES

Here is an up-to-date, relatively simple CW transmitter for you to try. Parts count has been kept to a minimum without sacrificing performance. Arrangements have been made for factory-made printed wiring boards, and a parts retailer has agreed to supply a kit of the necessary components at reasonable cost.

PERFORMANCE

Frequency	3.5-4MHz (depending on crystal)
Output Power	Typically 4 watts into 50 ohms
Spectral Purity	All harmonics at least 50dB below fundamental
Keying Ratio	100 percent with minimal click, chirp or whoop
Supply	Nominally 12 volts at 1 amp
Load Impedance	50 ohms. Will withstand any SWR without damage
VXO Shift	About 2kHz (option)

CIRCUIT

The crystal oscillator at Q1 is keyed on and off via Q2 — which supplies a shaped supply voltage to the oscillator. A compromise in rise and fall times is necessary to yield a sufficiently *crisp* keying characteristic consistent with minimal click and chirp (a crystal is essentially a mechanical device, so some inertia exists, which can result in chirp or whoop if the oscillator is ramped too slowly). The keyed CW signal is applied to the broadband amplifier at Q3, which provides about 20dB gain and 100mW of output power. Q4 is a new generation power MOSFET, intended primarily for use in switcher-type power supplies. These devices will operate at sufficient speed for Class B RF service, at 3.5MHz. They are slightly cheaper than a conventional bi-polar device for the same power level, more tolerant of load mismatch, unlikely to suffer from thermal runaway problems, and have a higher input impedance. Q4 raises the power level to about 4 watts. The output impedance is calculated:

$$Z = \frac{Vcc^2}{2Po}$$

$$= \frac{144}{8}$$

$$= 18 \text{ ohms,}$$

where Vcc = supply voltage and Po = expected output power. Broadband transformer T2 has an impedance ratio of 4:1, which provides a reasonable match to 50 ohms (with broadband transformers like T2, we can only obtain integer-squared ratios, ie 1, 4, 9 and so on). The wave-form emerging from the drain of Q4 can contain a significant harmonic content, and a low pass filter is necessary to reduce these components to an acceptable level, in this case —50dBc.

CONSTRUCTION

The printed wiring board accommodates all the components. Some of the parts may have longer lead spacing to those on the board. There is no reason to prevent these being mounted in the upright position if this is a problem. The power MOSFET Q4 should have a small TO220 heatsink flag attached. A smear of heatsink compound or petroleum jelly should be applied to the interface for efficient heat transfer.

Broadband transformers T1 and T2 are made as follows:

The Amidon FT50-43 cores must first be coated with some kind of enamel, such as Estapol or shellac. This prevents the two windings *from shorting should a scratch occur on the wire enamel. Give the cores a day or two in the sun to dry completely. Take two 300mm lengths of number 22 B&S (0.64mm) enamelled wire. Lay them parallel and twist the ends together at one end. Clamp this end in a vice. Now draw a cloth through the pair to remove any wrinkles, then twist the free ends together. Fix the pair in the chuck of a hand-drill. Whilst keeping the wire taut, turn the drill until there are about three twists per centimetre. Give the drill a tug to set the twists, then remove the pair. Carefully thread the pair through the core until there are about 11 loops. Cut the lead lengths to about two cm, and remove about one cm of enamel from each of the four leads. With a multimeter set to ohms, locate the respective windings. Now connect the end of one winding to the start of the other winding to form the tap. Do not solder these together, as a hole for each lead has been provided on the board.*

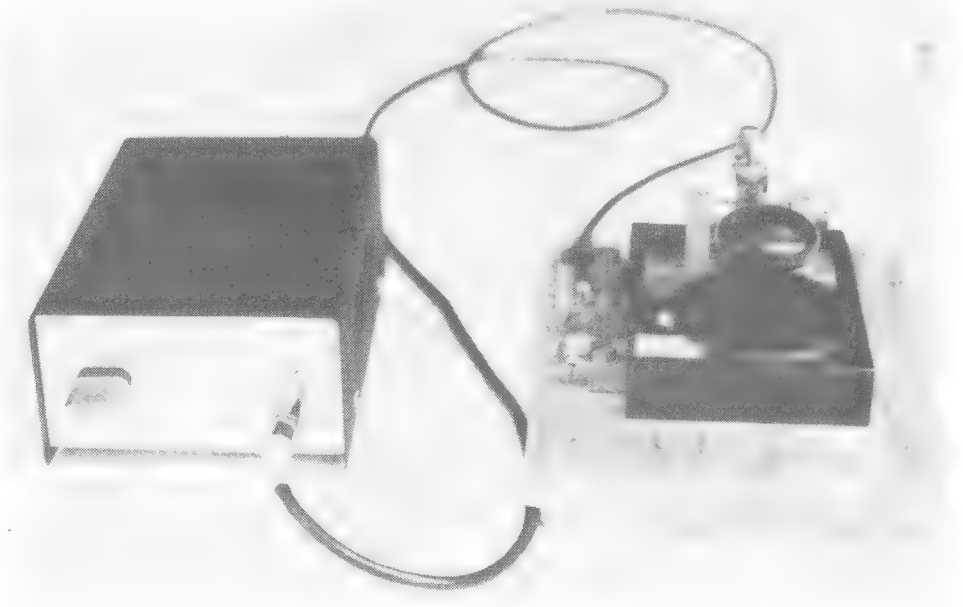
No special precautions are necessary for the remaining components. It is desirable that the PWB be mounted in a metal enclosure. Remember to provide some holes in the lid for ventilation of the power MOSFET output transistor.

It will be found operationally more convenient to mount the crystal socket on the front panel of the box. If you are fortunate in having lots of crystals available, there is nothing to prevent you from including a multi-position switch to make frequency changing more rapid. The 3.580MHz crystal with solder type leads will not require a socket.

If a variable crystal oscillator (VXO) is required, a variable capacitor with a maximum C of about 300pF (not critical) may be inserted in the *earthy* end of the crystal connection. The PWB has been planned so that the track may be cut, and the lead for the capacitor soldered to the spare pad provided. The frame (stator) of the capacitor is connected to the box, of course. Remember to allow extra room for the capacitor if a VXO is to be fitted (the box shown in the photo and the one supplied in the kit will probably be too small for most capacitors). If a crystal is being ordered from J&A for VXO, remember to specify a *rubbery* one.

TESTING

After checking that all components are correct and properly placed, the 12 volt supply may be



PARTS LIST

Capacitors — **Where used**

47pF Ceramic >25V C3
220pF Styroseal 'poly' C1
390pF Styroseal 'poly' C2
820pF Styroseal 'poly' C14, C17
1800pF Styroseal 'poly' C15, C16
1000pF Ceramic >25V C8
0.047μF Ceramic >25V C4, C5
0.1μF Ceramic >25V C6, C7, C9, C10, C11, C12, C13

Resistors

2.7 ohm ¼W or ½ 5% R10
10 ohm ¼W or ½ 5% R12
68 ohm ¼W or ½ 5% R11, R14
150 ohm 1W 5% R13
470 ohm ¼W or ½ 5% R3, R6
1 kohm ¼W or ½ 5% R9
1.8 kohm ¼W or ½ 5% R7
2.2 kohm ¼W or ½ 5% R8
5.6 kohm ¼W or ½ 5% R2
10 kohm ¼W or ½ 5% R1, R5
22 kohm ¼W or ½ 5% R4

Semi-conductors

2N2222 ..... Q1
2N3638 ..... Q2
2N3053 ..... Q3
Motorola IRF510 ..... Q4
6.8V, 400mW zener D1

Inductors/Broadband Transformers

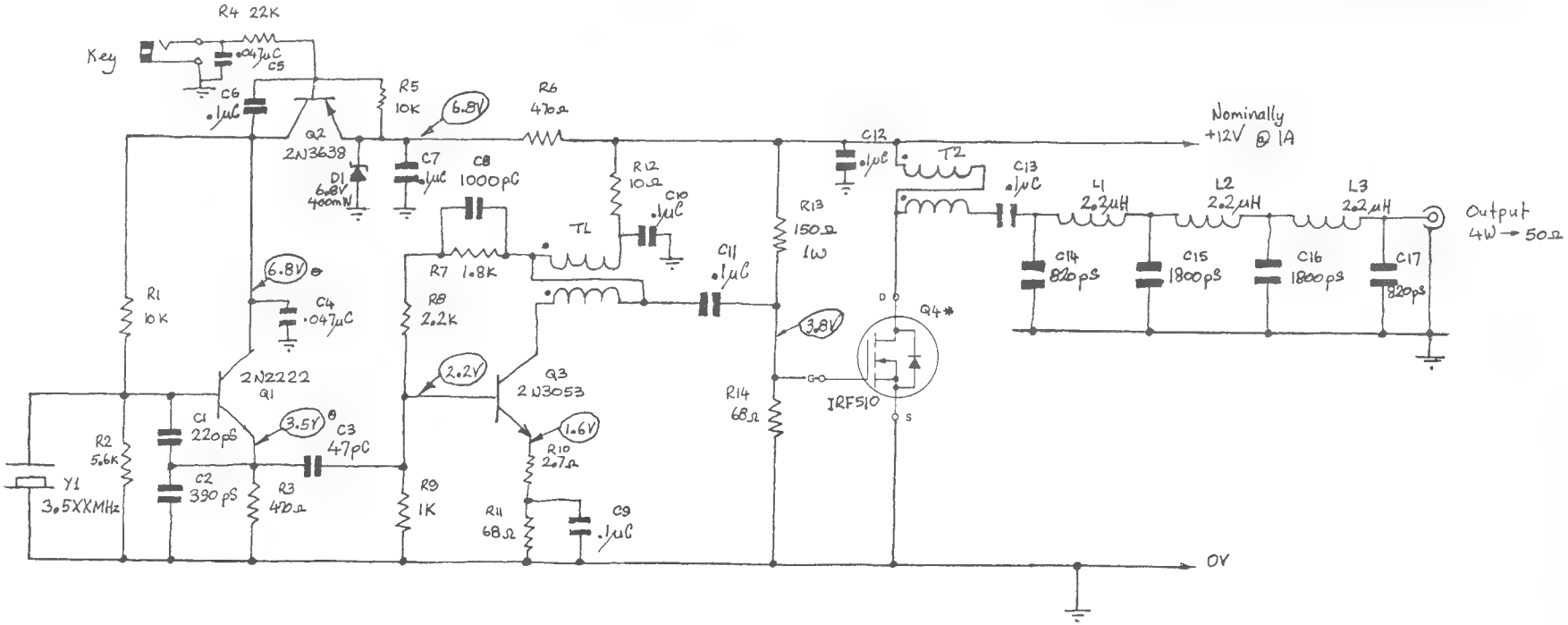
FT50-43 Amidon Cores T1, T2
T68-2 Amidon Cores L1, L2, L3

Crystal

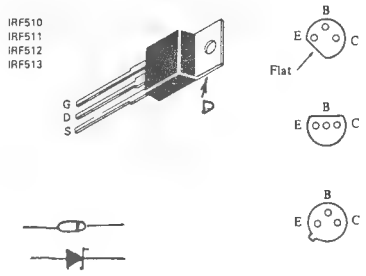
Crystal, 3.5XXMHz (your favourite frequency). Crystal must be active. Some television and clock crystals available ex-stock around 3.580MHz Y1

Hardware

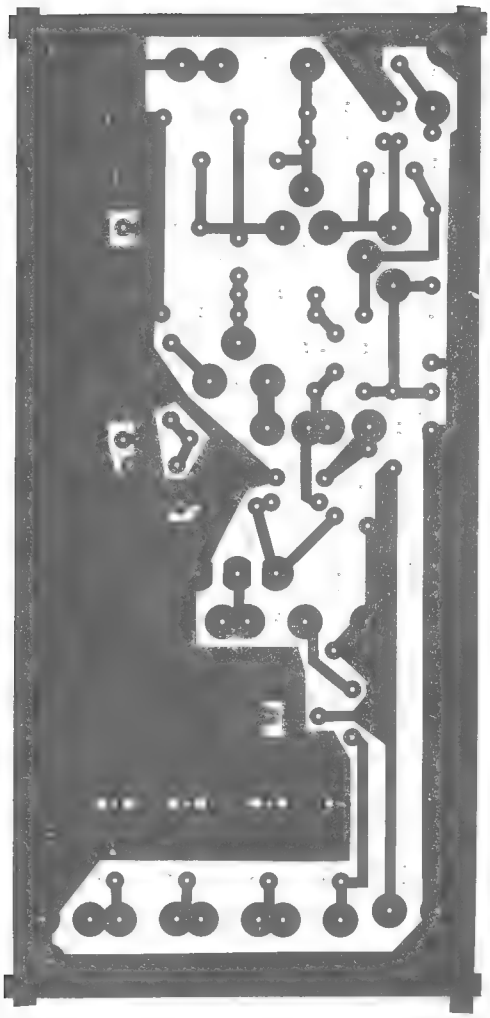
Printed wiring board, heatsink for Q4, key jack, antenna connector, screws, nuts, 22 B&S (0.64mm) enamelled wire, socket for crystal (if not solder-in type), etc.



T1, T2: ≈ 11 loops number 22 B&S (0.64mm) twisted bifilar on Amidon FT50-43 lacquered core.
L1, L2, L3: 16 turns number 22 B&S on Amidon T68-2 core.
S: Styroseal or Polypropylene.
C: Ceramic.
All resistors ½W or ¼W 5% except R13, which is 1W.
* Heatsink attached to Q4.
θ Measured with key closed.



Circuit Diagram.



lamp connected to a coaxial connector to suit. When the key is closed, about four watts should be indicated on a power meter, or the lamp should be brightly lit, indicating that the transmitter is working. Listen to the signal on the station receiver. It should sound clean, without excessive chirp, click or whoop. Under 50 ohm load conditions, the transmitter will draw about 900mA from a 12 or 13 volt supply. By the way, the supply voltage is not critical, anything up to about 15 volts should not damage the output MOSFET.

OPERATION

Some method of switching the antenna from the transmitter to the receiver must be provided. A relay, or an ordinary panel switch will do, but remember to solder all the braids of the coax together where they connect to the switch or relay. There is no need for the 12 volt supply to be removed from the transmitter during reception, as the oscillator will be in the off-state. By closing the key without switching the antenna over, the output frequency may be checked on the receiver without putting a signal to air. Side-tone monitoring during transmission is of course provided by the receiver. It will probably be found necessary to turn the RF gain down to minimum to provide a comfortable level.

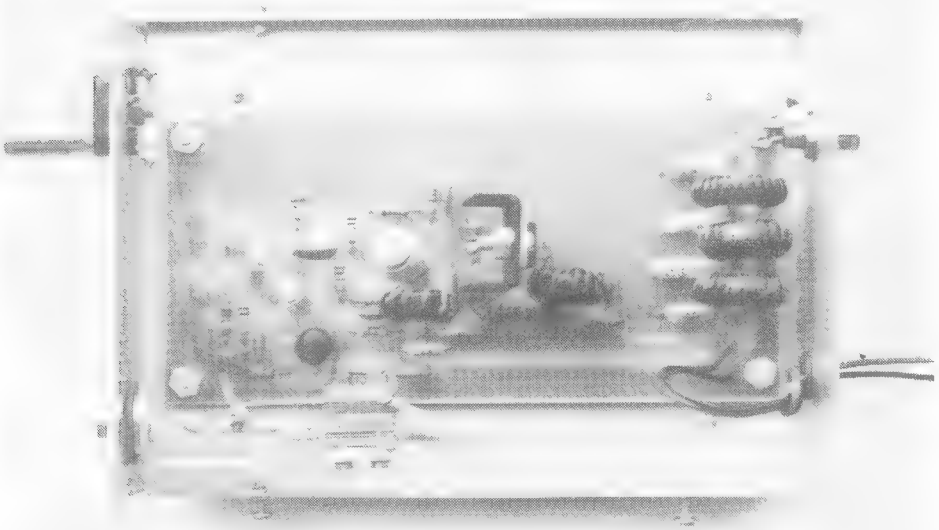
PARTS SOURCE

Most of the traditional radio components suppliers have deserted us (is it our fault?). However, Truscotts of Croydon, Victoria, have agreed to supply a kit of parts as follows:

Basic Kit, including PWB . . . $25.50
Box (as in photograph) . . . add $5.50
Crystal — solder in type, 3.58MHz . . . add $3.50
Supplier — Ian J Truscott's Electronic World, 30 Lacey Street, Croydon, Vic. 3136. Telephone: (03) 723 3860.

A crystal on your choice of frequency may be obtained from:

J and A Crystals, 20 Delville Street, Mentone, Vic. 3194.



applied. A 50 ohm dummy load or power meter must be connected to the output connector of the transmitter. If a dummy load/power meter are not available, a reasonable substitute could consist of a 12V/200mA/2.4W, or a 12V/4W

Specify Style D "rubbery" for VXO, and the frequency. Anywhere from 3.501 to about 3.580MHz for full-calls, and 3.526 to 3.800MHz for novices is suggested.

AR

REPORT OF 28th JOTA

Most of the reports from various Branch Organisers and Liaison Groups associated with the 28th Jamboree-on-the-Air, which was held on 19-20th October 1985, commented on the poor propagation, due to the low level of the sunspot cycle. It is hoped there will be an improvement this year.

All Organisers offer their thanks to the amateurs for their help and to the WIA for support of JOTA and other scouting events.

As part of the WIA 75th Anniversary, the WIA provided special QSL cards to all participating JOTA stations.

JOTA is the only Annual International event on the Australian Scout and Guide Calendar, and the only International event in which the vast majority of members could ever participate. In a country as isolated as Australia, JOTA is extremely important to the concept of the fourth Scout Law — **Brotherhood.** *More amateurs are always needed and are most welcome to participate, so make 1986 your year to assist this goodwill.*

The official Scout call signs (VK*S??) are continuing to increase in numbers and VK*GGA (for the Guides) is also registered in many states.

The general statistics of stations that participated is as follows:

In VK1 five stations participated and had 72 contacts. VK2, 114 stations for 1669 contacts. VK3, 180 stations and 1439 contacts. VK4, 72 stations and 914 contacts. VK5, 84 stations worked 812 contacts. VK6, 72 stations for 1110 contacts. VK7, 24 stations and 281 contacts. There was an overall total of 551 stations participating, using 1140 call signs with 6297 contacts recorded. This compares with 1084 call signs in 1984, who worked 5623 contacts.

Please become involved in the 1986 JOTA and double the above figures!

Condensed from the Report on the Australian Participation in the 28th Jamboree-on-the-Air.

AR

NOW AVAILABLE

LIMITED COPIES OF THE 1985-86 WIA CALL BOOK ARE NOW AVAILABLE FROM DIVISIONAL OFFICES

Price: $6.50 + P&P

AR86

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TYPE	100 MHz	200 MHz	400 MHz	900 MHz
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8D-FB	1.20	1.74	2.58	3 90
10D-FB	0.99	1.44	2.10	3 30
12D-FB	0 84	1.23	1.80	2.79
RG-8/AU	2.20	3.20	4.70	8.00
LDF-450	0 75	1.40	1.80	2.50

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CABLE		N-CONNECTORS	
5D-FB	$2.90m	NP-5DFB.	$12.00 ea.
8D-FB	$4.20m	NP-8DFB.....	$12.40 ea.
10D-FB	$6 30m	NP-10DFB.....	$12.90 ea.
12D FB	$8.70m	NP-12DFB.....	$13.70 ea.

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MODEL HS-370S

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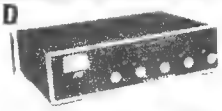
$449 + $14 P & P

ANTENNA MATCHER FOR CONTINUOUS HF COVERAGE - MFJ-941D



Apart from being extremely versatile the MFJ-941B includes a 6-position coax-switch, SWR power meter, 4:1 Balun and will feed balanced line, single wire and coaxfeed antennas.

$349 + $14 P&P

2 KW DUMMY LOAD

MFJ-250 Low SWR to 400 MHz, 2 KW PEP, supplied with transformer oil.

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New T2-FD series provides continuous HF coverage

200 WATT MODELS

3.5-30-T2-FD-200 is 25m long, 3.5 30 MHz

1.8-30-T2 FD-200 is 30m long, 1.8-30 MHz, **both priced at $171 + $14 p & p**

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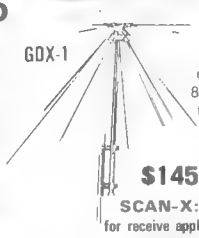

GDX-1

GDX-1 16 element discone 80-480 MHz suits transmitters and receivers

$145 + $14 p&p

SCAN-X: 6 element discone for receive applications 65-520 MHz.

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2 metre RINGO

The antenna for 2 mx FM work. 9dBi gain, omnidirectional

$94 + $14 P&P

GIVE YOUR RINGO ANOTHER 1.5dB

with our RK-1 decoupling radial kit

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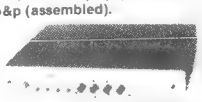
FOR THE RTTY OPERATOR

MDK-17 (KIT) MOD-DEMOD

A high performance RTTY/CW modem kit for use on a computer or teletype. Offers high noise immunity on receive **$142 + $6 p&p (kit) or $219 $8 p&p (assembled).**

MFJ-1224



Versatile RTTY/CW modem. Interfaces with a computer and is supplied with software for VIC-20 or Commodore-64 **$365 + $14 p&p**

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Now point your beam in the correct direction using this Great circle Map! centred on Melbourne **$2** + $3 P&P

What is stronger than wire of equivalent cross section, non corrosive, non conductive, and has virtually no elongation?

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Now, guy your tower without having to break the wires with dozens of egg insulators, or worrying about them corroding away due to a salty atmosphere. Our Debeglass wire alternative is made using continuous filament fibreglass yarn, jacketed in UV stabilized vinyl chloride. Compare the figures below

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Deceglass	2 5	3 9	430	3 0	[illegible]	[illegible]
Steel w re	2 5	5 6	370	3 15	9 1	8(

DB-4 (4 mm) $0.55m DB-5 (5 mm) $0.78 DB-6 (6 mm) $1.30 Debeclip Termination Clip to Suit DB4, DB5, DB6 $4 95 each

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BAND PLANNING FOR THE VHF AND UHF BANDS

Ron Henderson VK1RH
171 Kingsford Smith Drive, Melba, ACT. 2615

This article continues our band planning review, concentrating on the very-high and ultra-high frequency bands. For consistency it uses the same definitions as the earlier HF band planning paper; these were extracted from the WIA Call Book and are reproduced below for reference.

The following terminology has been adopted for the purposes of the Australian Band Plan:

CW only

Narrow Band Modes (other than CW) — for example occupying bandwidths less than 2.5kHz, such as ASCII, Baudot (RTTY), AMTOR (ARQ/FEC) and Packet Radio.

Wide Band Modes — such as, for example SSB, FM, FAX, SSTV and Data Transmissions at greater than 300 Baud.

It is necessary, however, to indicate the use of FM separately from "Wide Band Modes" because of its greater occupied bandwidth.

International considerations impinge less on VHF/UHF band planning than they did in the previous HF considerations. Indeed, provided satellite and weak signal DX propagation modes (EME, Meteor Scatter and Auroral Scatter) are co-ordinated, we have greater flexibility with our national VHF/UHF Band plans. The need to conform to other nations repeater split frequencies is a desirable, but not a dominant aim as appropriate changes can be made in transceiver firm-ware in the worst case, furthermore, the point has been made before that commercial interests should not drive our Band Planning.

In contrast to HF Band planning, the VHF/UHF plans need to be defined in considerably more detail to provide adequate guidance (ie a suitable band segment) for all likely users with their many and varied transmission modes. Despite that comment, the principle Band plan sub-divisions become CW, Beacons, Phone, Satellites and FM. The call for discrete narrowband segments is less at VHF/UHF for RTTY and Data Transmissions are normally made using AFSK tone bearers which frequency modulate the carrier to produce a resultant Wide Band signal that is accommodated in the FM sub-band. Packet Radio falls into this category also, the Baud rate and modulation means employed determining the occupied bandwidth.

Table 1 — Agreed WIA 52MHz Band Plan.

POLICY REF	FREQUENCY	DETAILS
81.09011	**50.000-52.000**	FTAC authorised to provide Band Plan.
77.093	**52.000-52.010**	EME
	52.010-52.050	DX CW 52.025 CW Call Freq 52.050 MS Call Freq
	52.050-52.100	DX CW/Phone 52.075 RTTY Call Freq 52.100 Pri Phone Call Freq
	52.100-52.300	CW/Phone 52.200 Sec Phone Call Freq 52.300 SSTV Call Freq
	52.300-52.400	Beacons — Secondary
	52.400-52.500	Beacons — Primary
81.0906	**52.500-53.000**	General All Modes
	53.000-54.000	FM Simplex and Repeaters
81.0907	**53.000-53.375**	Repeater Inputs — Allocated two/state
	53.400-53.575	Simplex Frequencies
	53.500	National FM Calling
	53.600-53.975	Repeater Outputs

NOTE: DOC provided the conditions for use of 50-52MHz — See Call Book.

50MHz BAND

Turning now to the bands in detail, Figure 1 shows the Band Plan for the 50-54MHz band, which is repeated in Table 1 with policy references. Not shown, but published in the 1984-85 and 1985-86 WIA Call Books are:

a The DOC conditions of use for the 50 to 52MHz segment, which is conditional upon location and transmission hours of Channel 0 television.

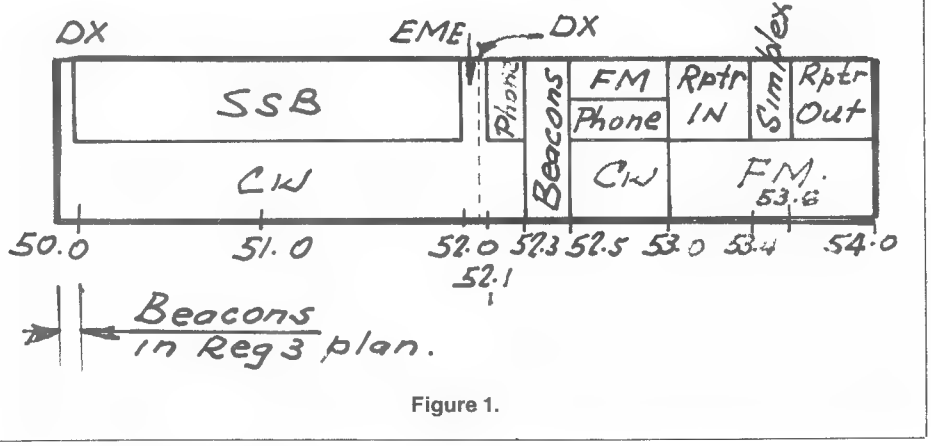


Figure 1.

b The beacon frequency allocation details where the relevant 10kHz steps align with the state call sign digits; eg VK1 has beacon frequencies of 52.410MHz primary and 52.310MHz secondary.

c The FM channel spacings which are 25kHz and the repeater split of 600kHz. There are sufficient repeater channels to allow two- per-state.

The only international consideration arising from the IARU Region 3 Band Plan shows a beacon sub-band coincident with our DX CW window from 50.000 to 50.100MHz. *Is this a problem for DX working?*

The interval from 52.000 to 52.500MHz is divided into many differing use sub-bands as shown in Table 1. In general, CW, Narrow Band Modes and Phone (<6kHz BW) exists below 52.500MHz, Wide Band Modes are added for the general segment 52.500 to 53.000MHz and FM dominates the upper megahertz.

This leads to a series of questions as to the satisfactory allocation of spectrum space:

** Is the allocation 52.100 to 52.300MHz adequate for Phone (SSB)?*

** Is the FM segment an out-of-proportion allocation seen on a MHz/user basis? Indeed, are repeaters desirable on the band, and how many?*

** Can the FM simplex channels be used for data (bandwidth wise they are compatible) or should Data Transmissions be in the general all modes segment 52.500 to 53.000MHz, where even greater bandwidth may be used?*

** Is there a need for an allocation for remote control applications; eg to remotely control receivers sited in optimum locations from more noisy sites as is often done for displays and demonstrations?*

144MHz BAND

The most popular of Australian VHF/UHF bands, the two-metre or, more correctly, 144-148MHz band is shown in Figure 2, and repeated in detail in Table 2 with policy references. This Band Plan also shows the progression from CW to Phone/CW then FM modes, interspersed with beacons and satellite sub-bands. Of note is the allocation of 50 percent of this band, in Australia, to FM and on a users-per-mode basis this is probably an equitable share. Not shown, but available from the Call Book, are beacon allocations (once again the 10s of kilohertz denote the call sign area digit), FM channels, which are 25kHz and a repeater split of 600kHz.

International consideration from IARU Region 3 are EME and satellite sub-bands which adequately align with the Australian Band Plan.

The interval 144.000 to 144.600MHz is divided into several sub-bands as shown in Table 2.

The questions posed by this Band Plan include:

** Can possible demands for further FM channels be supported and accommodated? Is there a real need for more repeater channels,*

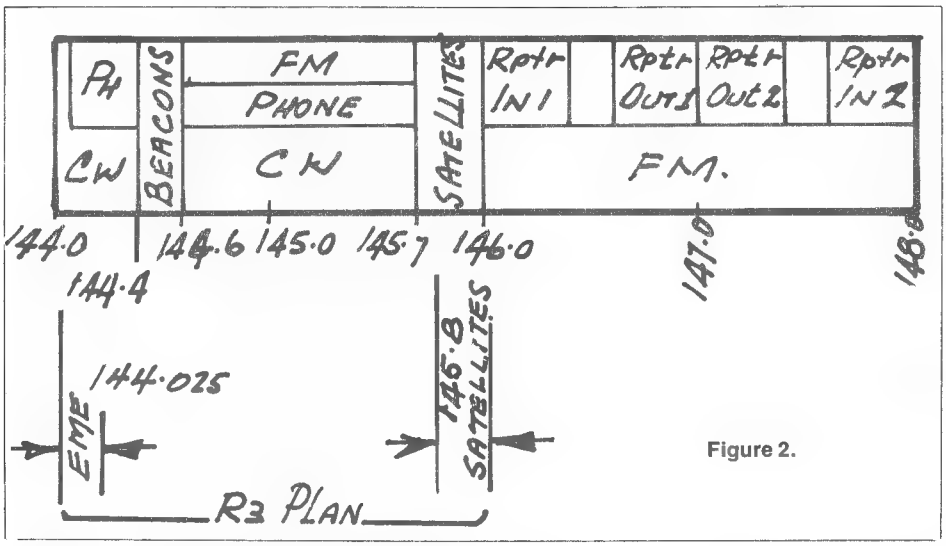


Figure 2.

Table 2 — Agreed WIA 144MHz Band Plan.

POLICY Ref	Frequency	Details
77.094	144.000-144.010-	EME
	144.010-144.050-	DX CW
		144.025 CW Calling
		144.050 MS Calling
	144.050-144.100-	DX CW/Phone
		144.075 RTTY Calling
	144.100-144.400-	CW/Phone
		144.100 Pri Phone Call
		144.200 Sec Phone Call
		144.300 SSTV Calling
	144.400-144.500-	Beacon — Primary
	144.500-144.600-	Beacons — Secondary
	144.600-144.700-	General All Modes
	145.700-146.000	Satellites
	146.000-148.000	FM Simplex and Repeaters
79.097C	146.000-147.000	Primary Voice
	146.025-146.400	Repeater Inputs
	146.425-146.600	Simplex
		146.500 National Simplex
		146.450 Primary Voice
		146.550 Primary Voice
		146.600 RTTY
	146.625-147.000	Repeater Outputs
	147.000-148.000	Local and Special Purpose
	147.025-147.375	Repeater Outputs
	147.400-147.600	Simplex
		147.400 ATV Liaison
		147.425 ATV Liaison
		147.450 ATV/ SSTV/FAX
		147.475 SSTV/ FAX Liaison
77.20.02		147.500 Sec Nat Calling
79.097C		147.550 Micro Nets
		147.575 Data Nets
		147.600 Data Nets
	147.625-147.975	Repeater Inputs

are the existing repeaters adequately utilised or are they status symbols for regional amateur radio interest groups?

** Are the presently designated Data and RTTY FM simplex and repeater channels sufficient and adequate for future needs (again they are bandwidth compatible) or should Data Transmissions be in the general all modes segment 144.600 to 145.700MHz, where even greater bandwidths may be used? Is there still a need to discriminate between RTTY and Data, for in computer jargon isn't the former a subset of the latter?*

** Is there a need for an allocation for remote control, or repeater linking, or should these actions be respectively accommodated in the general all-modes segment and via normal repeater output frequencies?*

** The paging services just above 148MHz are causing problems for amateur repeaters on the higher input frequencies. This is exacerbated by repeater receivers being sited at advantageous locations. As the pager transmitters are similarly sited they could interfere with mobile amateur receivers if FM voice systems are retained at the upper band edge. Perhaps a solution is to re-allocate the upper half megahertz to data systems. As data systems use discrete tones it should be possible to select these clear of paging tones and the error correction facilities would ensure continued usable transmissions should interference arise. Has this proposition any merit?*

420MHz BAND

The existing Band Plan for the 420 to 450MHz band, shown in Figure 3 and detailed in Table 3, with policy references, is complex and not aided by the Amateur Service being the secondary service. It is also the first Australian band in which really wideband transmissions are authorised as evidenced by the two ATV channels allocated, one even being of DSB bandwidth to facilitate ATV with quite simple equipment.

International constraints, as reflected through the IARU Region 3 Band Plan, include a weak signal segment and a satellite allocation, both are reflected in the published Australian Band Plan.

The larger ATV channel, 420 to 432MHz is located at the lower edge of the band, below the allocation existing for many amateur communities in our region and the second, 433 to 450MHz (a VSB channel), is located at the remote band edge providing maximum separation for in-band repeaters.

The FM allocation from 433 to 440MHz is split by the international satellite sub-band from 435 to 438MHz, giving rise to a 5MHz repeater split frequency. Furthermore, the repeater input and output channels (using 25kHz spacings) are themselves split to accommodate a FM

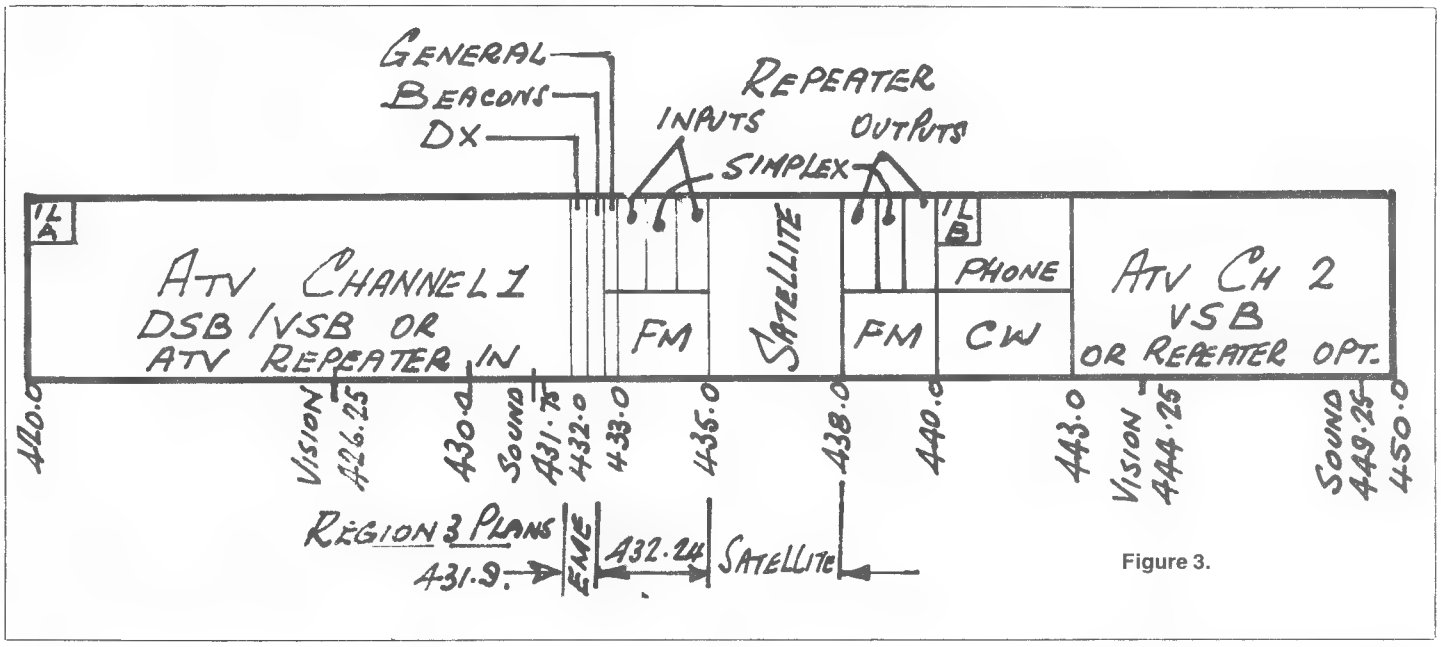


Figure 3.

Table 3 — Agreed WIA 420MHz Band Plan.

POLICY REF	FREQUENCY	DETAILS
75.200.2	**420.000-432.000**	ATV Channel 1 DSB/ VSB 426.250 Vision 431.750 Sound
85.09.12/2	**420.050-421.000**	Repeater Linking — A pairs
75.20.2	**432.000-432.010**	DX EME
	432.010-432.025	DX CW 432.025 Calling Freq
	432.025-432.050	DX MS 432.050 Calling Freq
	432.050-432.075	DX RTTY 432.075 Calling Freq
	432.075-432.100	DX Phone 432.100 Pri Calling Freq
	432.100-432.200	Phone 432.200 Sec Calling Freq
	432.200-432.300	SSTV 432.300 Calling Freq
	432.300-432.400	CW/Phone
77.096	**432.400-432.600**	Beacons
77.096	**432.600-433.000**	General All Modes
80.1707D	**433.025-433.725**	FM Repeater Inputs 433.075 Mobile Voice 433.125 RTTY 433.225 Sec Mobile Voice 433.275 RTTY 433.375 Mobile Voice 433.425 Data 433.525 Nat Pri Mobile Voice 433.575 Data 433.625 WICEN 433.675 Sec Mobile Voice 433.725 SSTV
	433.750-434.250	Any FM
	434.275-434.975	FM Repeater Inputs 434.275 Mobile Voice 434.325 RTTY 434.425 Mobile Voice 434.575 Mobile Voice 434.725 Mobile Voice 434.875 Mobile Voice
	435.000-438.000	Satellites
	438.025-438.725	FM Repeater Outputs
	438.750-439.250	FM Simplex 438.775 RTTY 438.825 Sec Voice 438.875 Data 438.925 SSTV 439.000 Nat Pri Voice 439.125 Sec Voice
	438.275-439.975	FM Repeater Outputs
85.09.12/2	**440.050-441.000**	Repeater Linking — B Pairs
76.1703	**440.000-443.000**	Experimental — All Modes
75.20.2	**443.000-450.000**	ATV Channel 2 VSB 444.250 Vision Carrier 449.750 Sound Carrier

simplex sub-band in the middle of each.

Provision has been made in the Band Plan for a system of interlinking pairs (sub-band A 420 to 421MHz, sub-band B 440 to 441MHz, that is, a 20MHz split) for use to link repeaters, WIA broadcast facilities and for remote control of receivers.

The interval 432 to 433MHz is subdivided to serve a number of potential users, as shown in Table 3. Not shown, but available from the Call Book are DX calling frequencies, beacon allocations and FM repeater and simplex channel frequencies.

There are a few questions which can be raised about this Band Plan

** Do the FM repeater frequencies need to be tidied up to group together the simplex frequencies?*

** Is the interlinking pairs allocation adequate for the foreseeable future?*

** Should we aim to discourage DSB ATV? Should we consider a phase-out date for DSB ATV? Or does it serve a useful purpose in permitting newcomers to ATV to build simple equipment?*

** Are there adequate channels provided for data in the FM sub-band or should data go into the all modes segment 440 to 443MHz where even wider bandwidths may be employed?*

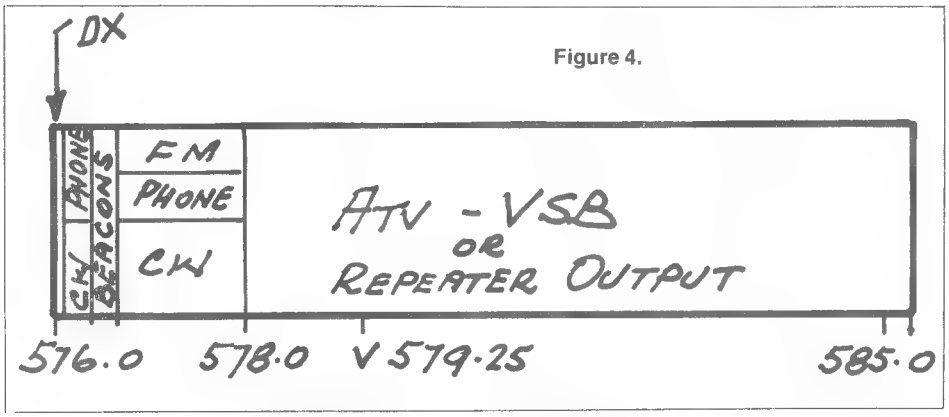


Figure 4.

Table 4 — WIA Band Plan for 576MHz Band.

BAND SEGMENT	USAGE
576.000-576.010	EME only
576.010-576.050	DX 576.025 CW Calling
576.050-576.100	DX 576.050 Phone Calling 576.075 RTTY Calling 576.100 SSB Calling
576.100-576.400	General 576.200 SSB Calling Sec 576.300 SSTV Calling
576.400-576.500	Beacons Sec
576.500-576.600	Beacons Pri
576.600-578.000	General All Modes
578.000-585.000	ATV VSB

576MHz BAND

The 576 to 585MHz band is a temporary allocation to Australian amateurs in the UHF broadcasting (TV) allocation. Historically, it was part of the old harmonically related series 144/288/576MHz and the Band Plan is shown in Figure 4 and detailed in Table 4.

Over the last year, or so, the WIA has, in keeping with agreed policy, been seeking an assurance from DOC that a band allocation in the vicinity of 576MHz will continue to be available to the Amateur Service, despite increased activity by UHF television. Of recent times, the 576MHz band has provided the repeater output channel for cross-band 420 to 576MHz ATV repeaters and it is for this purpose that negotiations continue with DOC. The WIA has adopted the attitude that an ATV channel is required for repeater outputs, but its precise frequency is open to negotiation and can be any television channel in the vicinity of 600MHz that is clear and available on a regional, or even local use basis.

It is therefore recommended the existing Band Plan remain unchanged, but a fall back position of one UHF television channel for ATV repeater outputs be the WIA attitude. This is virtually implied by policy resolutions from recent Federal Conventions.

1296MHz Band

The Band Plan for the 1240 to 1300MHz band, as shown in Figure 5 and detailed in Table 5 with policy references, was developed only recently and adopted at the 1985 WIA Federal Convention. The international considerations of the plan include satellite and EME sub-bands, which align with the IARU Region 3 Band Plans.

Other features of the Band Plan are:

a Two wide ATV channels, well separated by 28MHz to allow in-band repeaters.

b FM sub-bands for repeater, simplex, relays and linking purposes.

c Sub-bands for in-band and cross-band linear transponders.

d A separate sub-band for Digital and Packet Radio.

e Avoidance of band space adjacent to air traffic control radars, a guard-band of ± 5MHz is recommended.

Not shown, but available from the Call Book and Amateur Radio are details of:

a The FM channels; 30 repeater channels at 25kHz spacing and 12MHz split, 20 of these channels are allocated to mobile voice, four to RTTY, four to data and two to ATV liaison.

b The beacon sub-band 1296.400 to 1296.590MHz with frequency allocations aligning with state call sign digit, as on the VHF bands.

As the planning for this band was only carried out recently (in 1984/85), it contains some features which may only be present in part if at all in the VHF/UHF bands considered earlier. Interlinking and relay frequencies appear as in the 420MHz band (but not in the 144MHz band as noted in an earlier question). Provision has been made for linear transponders (there is an experimental reduced carrier single sideband (RSSB) repeater active in Great Britain) and a separate Digital/Packet Radio sub- band has been allocated, in addition to FM channels for RTTY and Data Transmissions.

There should not be any need for revisions to this Band Plan so soon after adoption; a change of repeater split frequency is not considered a technically viable option due to the presence of air traffic control radars in the band. As suggested earlier, modern transceiver design should accommodate varying splits in software or firmware.

AMATEUR REVIEW AND ACCEPTANCE

As was said at the conclusion of the earlier HF Band Planning paper, it is now left to you, the amateur, to endorse these current Band Plans, or to record your dissatisfaction with any features through the columns of this magazine, through your WIA Division, Divisional Federal Councillor, or by writing to the WIA Federal Technical Advisory Committee. The last named will co-ordinate comments and present any amendments as appropriate recommendations to the next Federal Convention. Over to you!

AR

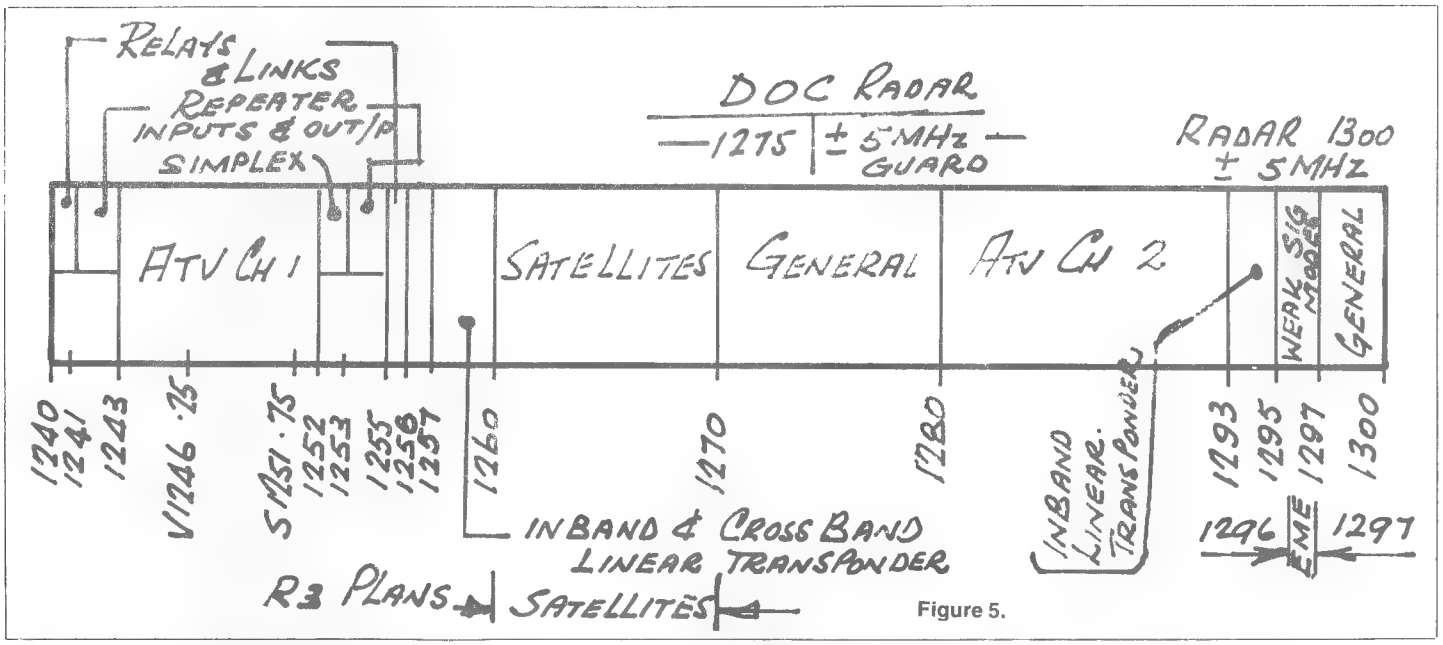


Figure 5.

Table 5 — Agreed WIA 1296MHz Band Plan. (All Refs are 85.09.12/1).

BAND SEGMENT	USAGE
1240.000-1241.000	FM Relays and Links
1241.000-1243.000	FM Repeater Inputs
1243.000-1252.000	ATV Channel 1, Sound 1251.75; Vision 1246.25
1252.000-1253.000	FM Simplex
1253.000-1255.000	FM Repeater Outputs
1255.000-1256.000	FM Relays and Links
1256.000-1257.000	Digital and Packet Radio
1257.000-1260.000	In-Band and Cross-Band Linear Transponder
1260.000-1270.000	Satellite Communication (WARC 79)
1270.000-1280.000	General Use except in areas where these frequencies are in use for Radio Location (Note 2)
1280.000-1293.000	ATV Channel 2, Sound 1292.750, Vision 1287.250
1293.000-1295.000	In-Band Linear Transponder
1295.000-1297.000	Weak Signal Modes, including Beacons (Note 3)
1297.000-1300.000	General Use except in areas where these frequencies are in use for Radio Location (Note 2)

FM REPEATER OUTPUT FREQUENCIES AND RECOMMENDED USAGE

Output: 1253.025-1255.000MHz at 25kHz
Input: 1241.025-1243.000MHz 12MHz Split

FREQUENCY MHz	USAGE
1253.050	RTTY
1253.100	Mobile Voice
1253.150	RTTY
1253.200	Mobile Voice
1253.250	Data
1253.300	Mobile Voice
1253.350	Data
1253.400	Mobile Voice Secondary
1253.500	Mobile Voice Primary
1253.600	Mobile Voice Secondary
1253.700	Mobile Voice
1253.800	Mobile Voice
1253.850	ATV Liaison
1253.900	Mobile Voice
1253.950	ATV Liaison
1254.000	Mobile Voice
1254.100	Mobile Voice
1254.150	RTTY
1254.200	Mobile Voice
1254.250	RTTY
1254.300	Mobile Voice
1254.350	Data
1254.400	Mobile Voice
1254.450	Data
1254.500	Mobile Voice
1254.600	Mobile Voice
1254.700	Mobile Voice
1254.800	Mobile Voice
1254.900	Mobile Voice
1255.000	Mobile Voice

Why are there Sidebands in AM Transmissions?

The simple answer is that, qualitatively, modulation is a mixing process between two or more frequencies and thus produces their sums and differences. In this article, the author explains, particularly for those who are not Old Timers, the quantitative basis of the process.

Greg Baker L20282
Half Moon Road, Mongarlowe, via Braidwood, NSW. 2622

Amplitude Modulation of a carrier wave results in the original carrier, plus two sidebands. Because the production of sidebands is not intuitively obvious, it must be proved mathematically.

A carrier wave has a sinusoidal form which can be represented by either a sine or a cosine formula. Take such a carrier

AcosXt

where A is the amplitude and X is the frequency. Since the carrier can be considered as either current or voltage, A is either amps or volts. The symbol t is, of course, time in seconds. Frequency is measured in radians per second. If we want frequency in Hertz, the formula would become

Acos2πft.

The results are identical whichever is used.

Modulate the amplitude of this carrier with a pure tone

BcosYt

where B is the amplitude and Y is the frequency which is less than X. The resulting wave is

(a + BcosYt)cosXt

which on expansion gives

AcosXt + BcosXtcosYt

Now, eliminating sinPsinQ from the well-known trigonometric identities

cos(P+Q) = cosPcosQ — sinPsinQ
cos(P—Q) = cosPcosQ + sinPsinQ

yields (by addition)

cos(P+Q) + cos(P—Q) = 2.cosPcosQ
+4or

cosPcosQ = ½cos(P+Q) + ½cos(P—Q)

Using this, the modulated wave can be written as

AcosXt + ½Bcos(X+Y)t + ½Bcos(X—Y)t

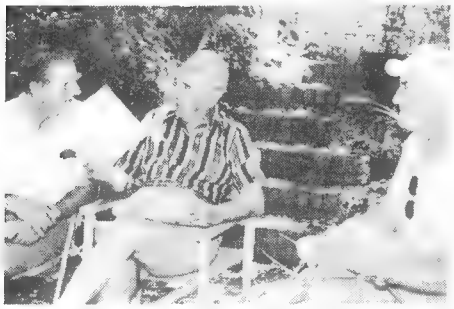
which is (i) the original carrier, plus (ii) a side frequency of (X+Y), and (iii) a side frequency of (X—Y).

Thus, a single modulating tone yields, in addition to the carrier, two distinct *side frequencies.* These frequencies depend on the carrier frequency X and the frequency of the modulating tone Y. If Y varies across a band of frequencies corresponding to say 0 to 3000Hertz, then so too will the two side frequencies vary up to 3000Hertz either side of the carrier frequency. This is two *sidebands,* an *upper sideband* and a *lower sideband,* each of width 3000Hertz and giving a total *bandwidth* of twice 3000Hertz, ie 6000Hertz.

VK5JSA — the Kangaroo Island Saga

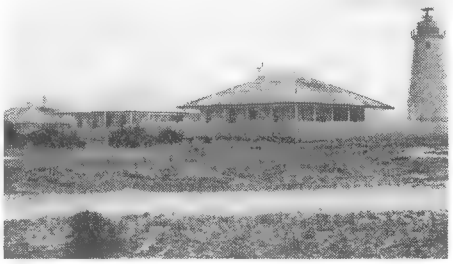
Alan Roocroft VK5ZN
41 Harvey Avenue, Salisbury, SA. 5108

As a contribution to the many facets of the Jubilee 150 celebrations in South Australia during 1986, VK5 amateurs are drawing attention to their state with a series of special event amateur radio operations which are scheduled to take place at various intervals throughout the year. Such operations will go to air under the call sign VK5JSA, and contact with this call will be worth 15 points toward the required total of 150 to be eligible for the *J-150 Award.* To date, much interest has been shown by fellow amateurs world-wide in this award, as is obvious by the intense activity on the special nets which are operational. (See Awards Column, this issue, for updated times and frequencies).



Bill VK5VK, briefs Ron VK5RV on the *Philanderer III* operation which he shared with Jack VK5FV. The planning stage was held at the home of Bob VK5BJA, in North Adelaide.

Alan VK5ZN, checks the Australian lighthouses dotted around the Australian coastline, watched by Graham VK5AQZ.



The Cape Willoughby landscape. The lighthouse is maintained by the Head Lighthouse Keeper, Phil Dent and his assistant Keith Robinson. The amateurs occupied the visitor's house in the background, 75 metres from the light.

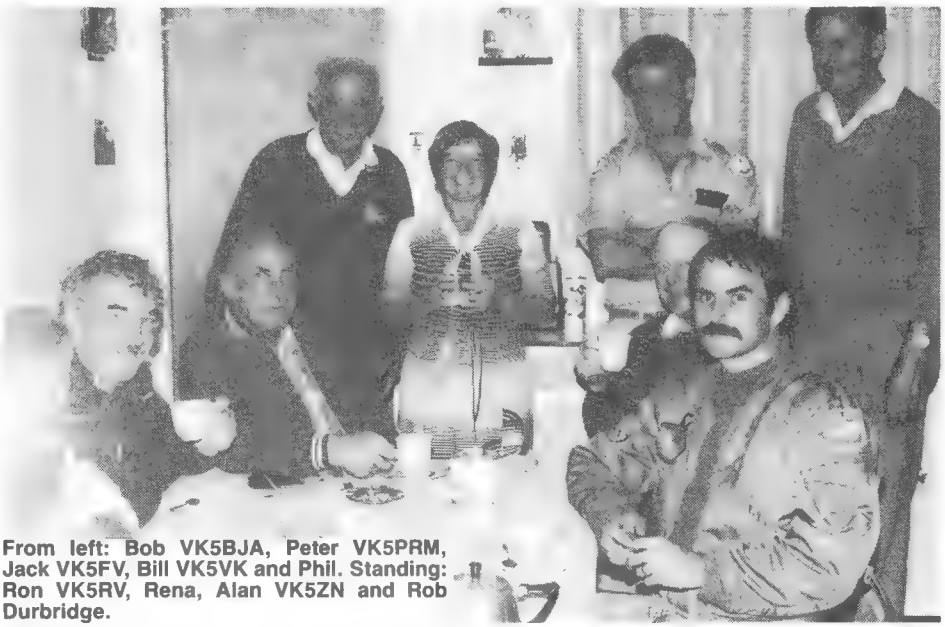
From the 21st January 1986, the first of these special event operations took place when Jack VK5FV and Bill VK5VK, launched VK5JSA/MM aboard the PHILANDERER III during its several crossings daily between Cape Jervis and Penneshaw, on Kangaroo Island. The journeys were of 55 minutes duration, each way, across Backstairs Passage, known as some of the roughest water to be found anywhere around the coast of Australia.

Complete with radios, whips, assorted loading coils, banners and posters (professionally prepared by Peter Koen, secretary of VK5BPA), also assorted hand-out material concerning the Jubilee, the WIA and amateur radio in general, these two *old salts* traded their land-legs for sea-legs.

Their operating location was a tiny corner of the bridge, which was fortunate as there was little room for movement, making it a little easier to stay in the chair while the *shack* was rapidly changing polarisation. Despite numerous discomforts, the intrepid sailors managed to make numerous HF and VHF contacts on each crossing and also from their night-camp at the club rooms of the local football club on the island.

Operation in this vein continued until 24th January, when the operators now destined for Cape Willoughby Lighthouse and a few days rest and recreation, were joined by Bob VK5BJA, Graham VK5AQZ, Alan VK5ZN, Ron VK5RV, Peter VK5PMR and Rob (from the South Coast ARC and soon to be licensed).

The newcomers brought a Land Cruiser and trailer, packed to the limit with equipment and supplies. The group were also met by a Relief Force and car to provide transport across the 40km of bush roads to the eastern tip of the island, where the lighthouse is situated. The group were met at the lighthouse by Phil, the resident light-keeper, his wife Rena and son



From left: Bob VK5BJA, Peter VK5PRM, Jack VK5FV, Bill VK5VK and Phil. Standing: Ron VK5RV, Rena, Alan VK5ZN and Rob Durbridge.

Kevin, who proved to be the most helpful, friendly and cheerful hosts one could ever hope to meet. Nothing was too much trouble for this trio in their efforts to make their guests feel at home. Tea, coffee, cake and biscuits flowed freely and continuously, along with odds- and-ends which had inadvertently been overlooked.

(Over the years in their chosen profession, the whole family had become used to radio in some form or another, but they were thrilled to be able to witness amateur radio with some of the operators and expressed serious interest in getting a license. Watch for the lighthouse on a regular basis sometime in the future).

After refreshments upon arrival, Phil took note of the inquiry regarding an extremely noisy insulator on the pole outside the visitors sleeping-quarters. Massive sparks were clearly visible to an accompaniment of snaps and crackles and concern was expressed that HF radio would be nearly impossible unless this problem was rectified.

The following morning, whilst Graham and Ron were assembling the 204BA, the rest of the group were running up and down, like a colony of ants, erecting an *antenna farm* on

The lighthouse with the first jib on the top right of the house.

and around the lighthouse.

The antennae comprised a base-loaded wire vertical for 80/160 metre operation, this was 20 metres long, and supported at the top of the lighthouse by a wooden jib. A 40/80 metre trapped dipole hung from the top of the building and sloped slightly to the top of a conveniently positioned flag-pole a short distance away. A 10 element two metre Yagi and two metre J-Pole were erected atop the lighthouse. Lastly, a three full-wave concentric Delta Loop for 20, 40 and 80 metres (the pride and joy of Bob, Alan and Graham, as it had taken the full weekend before departure to construct and tune, with the aid of the 160 feet (48m) high Old Water Tower, home of VK5LZ, the Elizabeth ARC). This was a *gi-normous* array and certainly not an average suburban block construction!

It was during the afore-mentioned activities that the local electricity supply crew arrived, complete with *cherry-picker* in order to replace the troublesome insulator. When they had finished, they acceded the groups request to use the cherry-picker to lift the assembled 204BA onto its roost atop the mast.

With this done, and the power restored, it was time to test the rigs. Graham concentrated operating on 20 metres from the groups quarters, with occasional reliefs from Ron VK5RV. In the lighthouse, three other stations were set-up on the first landing. Communication between the 20 metre station and the stations at the lighthouse was essential and this was achieved by the kind assistance of 15 year-old Kevin, who ran back-and-forth with messages. Two metres was also employed.

The lighthouse bedecked with antennae.

The cherry-picker (top left) in operation erecting the 204BA.

Phil Dent and son Kevin watch Ron VK5RV in operation.

Rena Dent, enjoys the hospitality of the amateurs in return for the hospitality she afforded the amateurs.

It was extremely important to know exactly which frequency each operator was working on, not only so that accidental meetings could be avoided, but also directions could be broadcast as to where the other VK5JSA emissions could e found for more points toward the award. This worked extremely well especially when VK3 stations were contacted on HF as they were told, with certainty, that the VK5JSA VHF operator was currently accessing the Mount William, Mount Macedon, Ballarat or Shepparton repeaters. Distant Victorian repeaters were easily accessed most of the time.

At the end of an enjoyable weekend, Bill and Jack took over the site to allow the weekenders to return to their respective homes and employment. Bill and Jack were to spend a more leisurely six days of operation.

By the time the exercise was over, and considering the poor DX conditions and heavy reliance on 80 metres at night, and 40 metres by day (very little was heard on 15 and even less on 10 metres), the figures were quite good. The whole operation logged 1130 different stations, (numerous repeat contacts were not counted), mostly of a few overs duration.

Of this total, 827 were VKs and 303 were DX and 70 percent (757 QSOs) were made on the weekend in less than 36 hours operating time. There were 38 countries logged with the major contributors being VK; W/K; JA; ZL; VE and I, in that order. All contacts are guaranteed a Jubilee QSL card via the bureau.

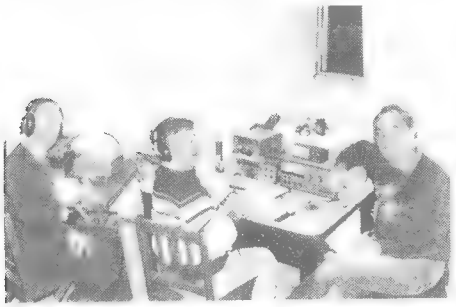
One of the targets set for the expedition was an attempt to establish contact with the mayor of Port Lavaca, Texas (the twin city of Kangaroo Island), and have Neville Cordes, Mayor of Kingscote and Dudley at at the lighthouse to exchange greetings and news of their respective area's 150th celebrations. Chuck VK6CF, had earlier been enlisted to have his American friends in Texas and Florida make the necessary arrangements for this meeting at the USA end. However, Murphy's Law stipulated that propagation was to be against such a hook-up. Nevertheless, Neville made the trip out to Cape Willoughby on both the Sunday and Monday, but he finally had to resort to dictating a lengthy message to Chuck for him to relay on his next sched. For all the efforts of Chuck and his

From left: Kevin Dent, Alan VK5ZN (rear), Neville Cordes, Mayor of Kingscote, Bob VK5BJA (at rig), Maree Cordes, Chairman of the Kangaroo Island 159 Jubilee Committee, Rena Dent and George Murphy.

The Mayor of Kingscote in QSO with Chuck VK6CF.

George Murphy of the KI Jubilee 150 Committee presents Graham VK5AQZ with a copy of the Willoughby Lighthouse Jubilee Award. The Award is available for all contacts during the expedition.

Rob Durbridge does his share of the operating.



L to R: Alan VK5ZN, Bob VK5BJA and Peter VK5PRM.

friends, the South Australians send their thanks.

It would be remiss not to thank and acknowledge the many donors of rigs, ancillary equipment and assistance; vis Dick Smith, South Coast ARC, WIA (SA), Wally VK5ACN, Les VK5KLH, the Department of Transport, District Council of Kingscote and Dudley, *The Islander* newspaper, Jubilee 150 (KI), Tourist Information Centre (KI), Peter Koen for display material, the wives of the expeditioners for allowing them to go and to all amateurs who contacted VK5JSA, as their interest made the whole exercise worthwhile.

To all who did work the Cape Willoughby Lighthouse, do not forget to send a QSL card with details of the contact and marked *Lighthouse Award* to: *WIA SA Division, GPO Box 1234, Adelaide, SA. 5001.* Please include $2 towards processing costs to help keep the budget out of the red!

AR

Photographs courtesy Graham Horlin-Smith VK5AQZ on the island and Peter Koen on the mainland.

QSP

UK TO GET SATELLITE TV

Britain has given the go-ahead for three new television stations beaming programs directly into homes from satellites above the Equator.

The Home Office has invited Britain's Independent Broadcasting Authority controlling networks to advertise franchises for the new stations to be on-air by 1990.

The stations will be received using special dish antennas positioned on roofs or in backyards.

SATURDAY REFLECTION

A respected feature of that well-known daily newspaper "The Age" of Melbourne is the second editorial in its Saturday edition, always entitled "A Saturday Reflection". In the issue of 14th December 1985, its author paid tribute to the WIA during our 75th anniversary year. The editorial was so well-informed and complimentary that by special permission of "The Age" we reproduce it here. We apologise for allowing so many months to pass before bringing it to you.

Much of life is filled doing things necessary for living it. But it is enriched for those who make time to associate in voluntary groups having a common interest, and in which they may cultivate friendships and, as in many cases, serve the community.

This observation arises from the circumstance that this year the Wireless Institute of Australia is celebrating its 75th anniversary. The WIA's 8500 members (not to be confused with citizen band — CB users) have trained to be licensed owner-operators of radio stations in the amateur service.

They range from children to men and women of many trades and professions. They strengthen international understanding by conversing from their homes with some of the one million fellow amateurs as far afield as Greenland and Antarctica, the steppes of Russia and the jungles of Africa, and cities of China, Europe and the Americas. Apart from attending meetings, many form enduring on-air friendships and exchange visits with fellow operators at home and overseas.

Through their experimental work many have pioneered developments in radio technology which have benefited the whole of society. The Wireless Institute Civil Emergency Network (WICEN) springs into action whenever called upon in such contigencies as the bushfires on Ash Wednesday, and in the Maryborough and Bright areas this year.

Amateur operators, using battery-powered transmitters when electricity supplies failed, sent first news of the Darwin cyclone and the Mexican earthquake, and maintained communications between Mexico and the outside world, including Australia, until telephone services were restored.

The WIA is, of course, but one of numerous such voluntary institutions. Literally hundreds of thousands of persons make time and use their acquired skills to serve the community in an honorary capacity. They constitute the ranks of bodies such as the State Emergency Service, Red Cross, St John Ambulance Association, Country Fire Authority and scores of life-saving and charitable organisations.

Few societies can have enrolled more "amateurs" in service to mankind than the Church. Its first recruits enlisted by its Founder — himself a carpenter — included no professional ecclesiastics, but were all laymen.

Few writers of the Scriptures were professionals, but they included a sheep farmer, a drink waiter, a taxation clerk, a doctor, a king. The Church's first leader was a "big fisherman". Its first missionary, and writer of much of the New Testament, earned his living as an itinerant tent maker while making converts, organising them into new churches and inspiring them with the ideal of service.

Throughout its history the Church has consisted mostly of laymen and laywomen, serving together with their relatively few appointed leaders.

The ideal of selfless service is worth reflecting on today when society is in tension produced by greed — seen in such action as militant demands for ever less work, ever more pay, ever greater perks, and the "What's in it for me?" syndrome.

The world may salute all those who, outside their normal occupations and without thought of personal gain, volunteer to serve others in time of need.

AR

Thumbnail Sketches

Alan Shawsmith VK4SS
WIA QUEENSLAND HISTORIAN
35 Whynot Street, West End, Qld. 4101

ARTHUR ERNEST DILLON 4CH/4EZ

Arthur Ernest Dillon was active from 1921 to 1927.

Full and just recognition does not always come to those who deserve it. Fate deals with individuals in her own whimsical way, sometimes bestowing immortality on those less worthy than others. The early history of wireless is studded with such examples; Fleming, Lodge, Armstrong, Vail, Popov (to mention a few), who have never rightfully been acknowledged.

In Queensland, many made valuable contributions to the post-WWI state-of-the-art, but their efforts are seldom remembered now. One such person was A Ernie Dillon 4CH/4EZ.

Young Ernie grew up in the old gold mining town of Gympie. It appears that his first professional occupation was with the *Gympie Times* newspaper. After a short stint as a cadet journalist, he turned his attention to wider horizons and took off for the 'big smoke' — Brisbane. During the following six years, A E Dillon was to accomplish more in wireless than many do in a full lifetime of experimentation.

Perhaps his most noteworthy achievement was his *claim* to be the ***First Sound Broadcaster*** in Queensland — 25th July 1921. This was an outstanding demonstration of ability for one so young, as his station was constructed from 'raw' materials only. The event was published in both the *Brisbane Courier* and *Daily Mail*. This brought a response from one or two others, who were similarly engaged, as to the relative success of their tests. Whatever the outcome of these contentions, records clearly show that A E Dillon 4CH, was as progressive as anyone in this area of early broadcasting on the medium wave band.

Brisbane's oldest and historically rich building (convict built in 1827), is the Observatory, Signal, or Windmill Tower. It is undisputed that A E Dillon 4CH, was the first experimenter to conduct MW tests and transmissions from this tower during late 1921, or early 1922. The Tower was ideally suited for this purpose as it commanded a panoramic view from Moreton Bay in the east, to Darling Downs on the western horizon. Nearby, he erected a 150 feet (45m) mast and strung an 80 feet (24m) antenna between it and the Tower — the most impressive configuration of its kind in Queensland at the time. Under his direction, 240V AC was supplied. This simplified the problems of power supplies and enabled his tests to be conducted on QRO instead of QRP.

A E Dillon was largely responsible for the formation of the Queensland Institute of Radio Engineers (QIRE) and became its first Secretary/Treasurer. This body claimed to be the *first* of its kind in Australia. The list of Charter Members included the names of some very prominent citizens; vis experimenters, pioneers, academics and business men. Its main aim was to raise the status of wireless 'tinkering' to that of an organised science, with its members willing to assist anyone interested in intelligent research. The Articles of Association of the QIRE are still in existence, but are too lengthy to be included here. The Institute set-up its headquarters in the Observatory Tower, installed its own transmitter and operated under the call 4EZ. The inaugural meeting was held in March 1922, and the first radio broadcast a month later, in April 1922. The *Daily Mail* newspaper reported the test as a phenomenal success: *"Using only six watts, reception of music and voice was logged as far south as Sydney, New South Wales"*. Success indeed!

Ernie then returned to his home town and, with the help of his former employer *The Gympie Times,* called on all those interested to form a radio club. The Gympie Amateur Radio Club came into being in May 1923 — a first for Gympie and another first for 4CH.

Back in Brisbane in October 1923, Ernie participated in arrangements made by the QIRE to demonstrate wireless transmission to the general public. Using 25 watts of power a musical program was transmitted from the Observatory Tower and listened to by an audience of 1000 people attending a concert at the South Brisbane Technical College. This was quite a remarkable display of interest by the man in the street in the 'new fangled invention of wireless'. Yet another successful *first* for A E Dillon 4CH — a telegram was received from Sydney saying reception of the concert was loud and clear.

Before the end of the year 1923, 4CH was involved with yet another wireless interest group; vis the Australasian Radio Relay League. The already well established American Radio Relay League (ARRL) no doubt influenced the formation of this body in Australia and New Zealand — the aims of both Leagues being basically similar. At the inaugural meeting of the Queensland chapter of the League, A E Dillon was voted into an executive position — more work but also more success for the now very prominent Ernie 4CH.

The Relay League of Queensland (RLQ), a group completely distinct and separate in aspirations from the above-mentioned group, was then founded — and again A E Dillon's name was to be found listed as an RLQ Committee Member. It appears he was also on the Executive Council of another freshly formed society; vis The Radio Society of Queensland.

One might now well ask how he found time to attend adequately to all these various commitments. Besides his 8am-5pm work as an Electrical and Wireless Contractor he conducted broadcasts from both the Tower and his home at New Farm and made himself available as a guest speaker whenever asked. The newspapers and radio magazines of the period were already printing many of his articles and in October 1925, 4CH accepted the position of Technical Editor and Adviser with the newly-formed magazine *The Queensland Radio News*. As with all other aspects of his busy life, his output was prolific. This stay with the QRN can only be seen as most successful.

In retrospect, there is no doubt that the intense activity of A E Dillon 4CH, as an experimenter, broadcaster, administrator and journalist played a great part in stimulating wireless progress in Queensland between the years 1921-1927 and later into the 1930s. It is a pity that so little is now known of him.

At the height of his popularity and success, during the late 1920s, he appears to have dropped his experimental work, put away his very persuasive pen and left the City of Brisbane to take up work in northern and western Queensland. He also married. Fortunately, in his wisdom, he left to posterity a stack of newspaper clippings — stories and articles attesting to his various accomplishments. All these factually place him where he rightfully belongs — one of Queensland's outstanding early wireless pioneers.

A E Dillon 4CH, became a silent key on 24th March 1960, at Brisbane. He is survived by his wife, son Brian and daughter Ernene.

AH

QSP

NO NON-AMATEUR COMPUTERS

The ARRL has refused an FCC proposal that would turn the 52-54MHz portion of the six metre band over to non-amateur computer enthusiasts who would use it for data exchange.

RECONSIDER

A US Court of Appeals has ruled that a lower court must reconsider a case between the City of Lakeside and an amateur who wanted to erect a 70-foot tower. The FCC's limited pre-emption policy, while allowing municipalities to make regulations about the height and placement of antenna structures, is emphatic that all such regulations must reasonably accommodate amateur radio.

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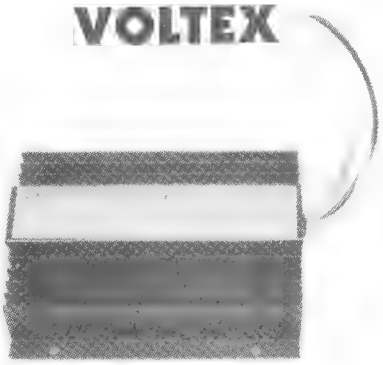

ELECTRONIC VOLTAGE REDUCERS

See Review on page 25, September AR.

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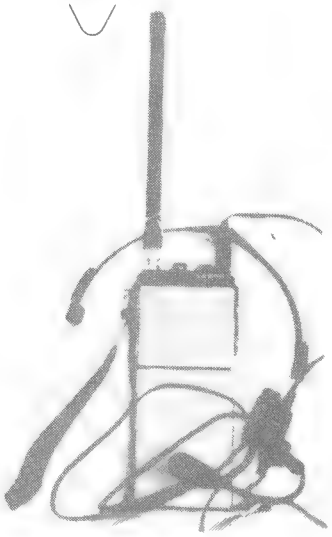
144-148 MHz
VOX operation with optional YH-2 Headset.



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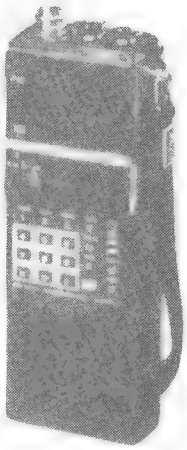

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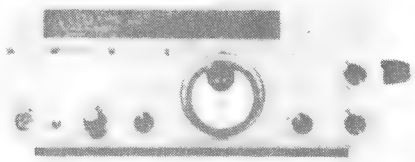
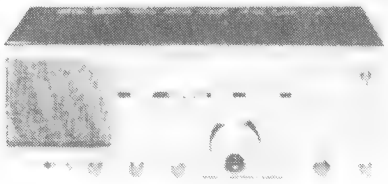


FT-757GX
HF ALL MODE TRANSCEIVER



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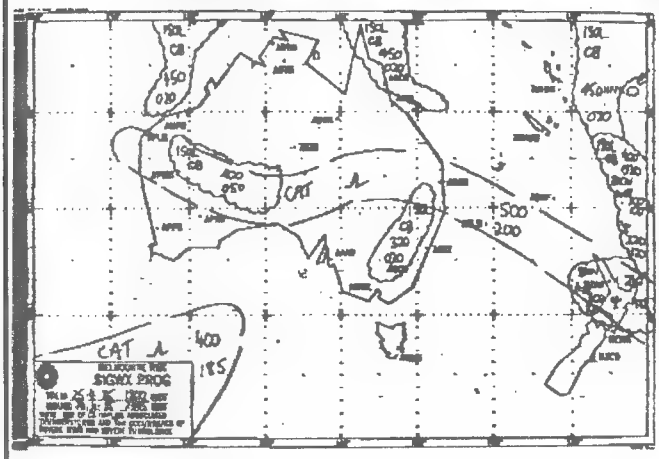
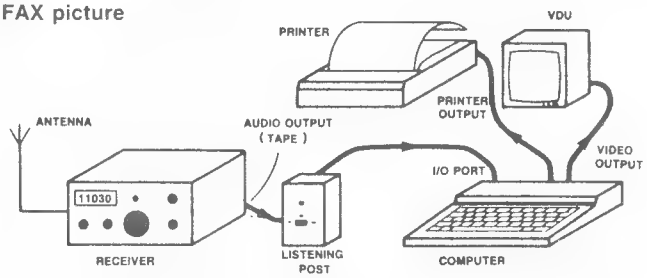


FAX picture



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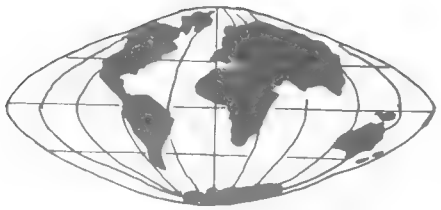

VHF UHF — an expanding world

Eric Jamieson VK5LP
1 Quinns Road, Forreston, SA. 5233

All times are Universal Co-ordinated Time and indicated as UTC

AMATEUR BANDS BEACONS

FREQUENCY	CALL SIGN	LOCATION
50.010	JA2IGY	*Mie*
50.020	JA6YBR	*Japan*
50.060	KH6EQI	*Honolulu*
50.075	VS6SIX	*Hong Kong*
50.109	JD1YAA	*Japan*
51.020	ZL1UHF	*Mount Climie*
52.013	P29BPL	*Loloata Island*
52.020	FK8KAB	*Noumea*[1]
52.100	ZK2SIX	*Niue*
52.200	VK8VF	*Darwin*
52.250	ZL2VHM	*Manawatu*
52.310	ZL3MHF	*Hornby*
52.320	VK6RTT	*Wickham*[2]
52.325	VK2RHV	*Newcastle*
52.370	VK7RST	*Hobart*
52.420	VK2RSY	*Sydney*
52.425	VK2RGB	*Gunnedah*
52.440	VK4RTL	*Townsville*
52.450	VK5VF	*Mount Lofty*
52.460	VK6RPH	*Perth*
52.470	VK7RNT	*Launceston*
52.490	ZL3SIX	*Blenheim*
52.510	ZL2MHF	*Upper Hutt*
144.019	VK6RBS	*Busselton*
144.400	VK4RTT	*Mount Mowbullan*
144.410	VK1RCC	*Canberra*
144.420	VK2RSY	*Sydney*
144.465	VK6RTW	*Albany*
144.480	VK8VF	*Darwin*
144.550	VK5RSE	*Mount Gambier*
144.565	VK6RPB	*Port Hedland*
144.600	VK6RTT	*Wickham*[3]
144.800	VK5VF	*Mount Lofty*
144.950	VK2RCW	*Sydney*
145.000	VK6RPH	*Perth*
432.057	VK6RBS	*Busselton*
432.160	VK6RPR	*Nedlands*
432.410	VK6RTT	*Wickham*[4]
432.420	VK2RSY	*Sydney*
432.440	VK4RBB	*Brisbane*
1296.171	VK6RBS	*Busselton*
1296.420	VK2RSY	*Sydney*
1296.480	VK6RPR	*Nedlands*
10300.000	VK6RVF	*Roleystone*

(1) A letter from John VK4PU, states he copied the FK8KAB beacon on 11th February 1986. It sends a series of dashes then ***FK8KAB Noumea 6 metres*** *then another set of dashes and then repeats the sequence again. John believes it may be a manned beacon. As soon as it stops, FK8 people spring up around 52.050 like magic.*

(2) (3) & (4) These VK6RTT (formerly Carnarvon) beacons are mentioned as operating under the VHF News heading of the February Newsletter of the North West Amateur Radio Society, at Wickham. The report reads: "The set of beacons, ex Carnarvon, have been refurbished by Graham VK6KAE, and are now on air under the same call sign. The beacons are located at a commercial site near Wickham on a very high hill. Antenna polarisation is vertical with a J Pole *being employed for six and two metres and a ⅝ whip for 70cm".*

It is good to know this group of beacons are once again operational even if the antenna polarisation is vertical; maybe someday omni-directional horizontally polarised antennas might be installed.

From the same publication: *"In mid-January, Dave VK6YA, worked Perth direct on two metres SSB. Stations worked were Phil VK6ZKD and Bob VK6ZFY. Both stations were heard well in Wickham, but the opening only lasted for seven minutes. Initial contact was established on six metres where signals were steadily rising to the point where Phil suggested a try on two metres, there was no contact on the first attempt but established on the second. In the days preceding this contact, Perth FM station 96FM was heard in Port Hedland, by Mark VK6WV. He tried to key up Perth Channel 4 with 12 watts and suspects he made the distance as he could hear another signal under the Karratha repeater on the same channel which he was keying. With the beacons now in place at Port Hedland and Wickham, we could perhaps look forward to further contacts of this type.*

"Grant VK6KE, from Shay Gap, reports a recent improvement in his two metre set-up and has now been heard on all repeaters from Exmouth to Hedland. He forecasts further improvement with a nine element Yagi to give his 150 watts signal some assistance".

Thanks for the first copy received of your newsletter, boys, please keep it coming. The Editor is Dave Holt VK6YA, PO Box 410, Wickham, WA. 6270, or phone (09) 187 1926.

SIX METRES

After the continued frenzied activity of the first two weeks in January, when six metres continued to show much life with contacts right across Australia and out to ZL and FK on an almost daily basis, conditions changed dramatically for the latter part of January and into February. A number of operators have written with an update to their six metre standings after having contacts with VK9LC and ZM8OY.

I was rather intrigued by the last paragraph in the letter from John VK4PU, when he says; *"Subject to completing confirmation, have only 27 countries yet, so hardly worth listing at the moment".* On the contrary, I think 27 countries are well worth listing, being in the upper bracket for VK, and a total I would be pleased to report! Half the fun of having a Standings List is whether you can eventually topple the next above you, sometimes you can work a country the other operator doesn't, so you get one closer. Please send in your list John!

By the time you read this Graham Baker VK8GB, will have taken up residence in Canberra, where I am quite sure he will find six metres very different! He has sent in his latest upgrade of countries worked and there is an increase, but you will have to wait until August to find out. In the meantime, he might just add some more. We wish you well in your new environment Graham, where you will be able to try your skills on two metres and 70cm in a way different from that to which you have been accustomed.

In response to a request from me during a six metre contact, Nev VK2QF sent a resume of the six metre scene from his location at Hargraves, about 200km north-west of Sydney, as well as an update of his six metre standings. As the letter is quite lengthy, some editing has been done, but all salient points are included.

Firstly, Nev comments on the presence of intruders from the north on the band, 52.450 and 52.100MHz, using SSB and on 52.250MHz from the east using FM, all in Asian (JA?) language. Also, on 3rd January 1986, he heard a CW station on 50.185 signing **DXF** at 0746,with beam heading north — maybe military in Irian Jaya or Timor?

Neville reported a superb six metre season with 348 QSOs. He spent a lot of time calling ZM8OY on CW as he missed the main 11/12 opening. Finally, he got him at 2130 on 27/12, despite an S9 noise level. VK9LC was easy to work at his distance on 23/12 (and other days) at 0311, S9+, using forward-scatter, not back-scatter as the Sydney stations were attempting. Propagation eventually shifted to Sydney and by 0330 most Sydney stations could hear Nev on that day and there-after, as the pattern for contacts had been set. Later, (31/12) Rudi VK9LM, continued to supply the Norfolk Island contacts after VK9LC had closed.

New Caledonian stations were prolific in their contacts, even FK1RF mobile. Ron YJ8RG, also was a consistent contact, particularly as he had increased transmitter power. The P29 beacon was heard frequently, often at the same time as VK4RTL. Nev had some trouble working P29BH, who was usually 5x1, also contacted P29ZEF, but no others.

Nev said he quite enjoyed the Ross Hull Contest, but as before, found the non-contestants reluctant to reciprocate numbers in some cases. He felt the QSO numbers would have been well down, but for the Contest, and enjoyed meeting old friends and swapping numbers and having a general talk. He wants the Ross Hull Contest to continue with consideration given to having a six metres- only section!

Since activating six years ago on six metres, Nev has had 3837 QSOs, including local ones (VK2JH and VK2DDC only), 25 countries, about 900 JAs confirmed, and, of course, 348 QSOs this season *"on a band full generally of good operating practices, comradeship and old friends each year — a perfect combination plus the odd surprise that only six metres can turn on!"*

The following extracts from Nev's log shows the extent of contacts, and this generally would have been the case for many others, particularly in the eastern states, but there appears a lot of contacts were made out of Australia, which shows the state of the band over a period of many weeks.

30/10 VK5ZGC 0903; 6/11 VK5, VK7 0900, ZL3AFN 0817; 8/11 VK8ZLX, VK8TM, VK8KTM, at 1000, mostly S9; 9/11 ZL1BHX 0947 5x2; 17/11 ZL2BPY 0549 529; 27/11 VK9ZB 2304 5x1; 28/11 VK9ZB 0106 5x3, ZL1, 2 & 3 from 0700 plus VK7, VK8GB 529 around 0930.

1/12 VK9ZB 5x9 0504; VK8ZCU 5x3 0722; 6/12 VK8ZLX 2238, P29BH 4x1 2301, VK1VP back-scatter 5x1 2304, VK8ZCU 5x9 1029; 11/12 ZL3NE, ZL1TZA 0900, missed ZM8OY; 14/12 YJ8RG 5x7 2357; 15/12 FK8EM 5x9 2220, ZL2CD 5x7 2226; 16/12 VK3, 4, 5, 7, 8, ZL1, 2, 3 from 0200, VK1 back-scatter (b/s); 17/12 VK7FB 5x9 2237; 18/12 VK3, 5, 7 from 0100, VK2 b/s; 20/12 YJ8RG 5x9 0218 (new PA in use), FK8EM 5x9 0726, FK1RF/mobile 0718; 22/12 FK8AX 419 2242, also VK3, 7; 23/12 VK2XJ b/s 5x5 0157, VK9LC weak b/s, then 5x9+at 0311, ZL2TPY 5x3 0320, VK9LC 5x9 0344 to 0350, no other stations hearing Nev at this time! From 0500, VK3, 5, 2 (on b/s), ZL2, 3, VK8 and at 2046 VK2BA b/s 5x4, ZL2, VK4, 5 to 2230; 24/12 VK5ZEE 5x9 0328, VK2XJ b/s 5x5 0343, then from 0700 VK5, ZL1, VK5ZRO/M, VK4, ZL2, VK6, VK2 b/s, ZL1, 3 and VK7 to 1030, VK2XJ b/s 5x7 2132, VK4ANR 2205, VK9LC 5x9 2222, VK3DU 5x9 2333. A very extensive coverage.

25/12 ZL2BPU 5x5 0713, ZL1, VK5, ZL3, 2, VK7 to 0850, VK1VP b/s 5x1 2101, FK8EM 5x9 2102. FK8AX 5x5 2143, YJ8RG 5x1 2245, VK4FNQ/P 5x2 2256; 26/12 P29BH 5x1 0103, VK4FXX 5x9 0111, FK8EM 5x1 0135, VK7, VK8GB 5x3 0158, VK4ALM 5x9 0610, VK8, ZL1, ZL2 to 1300, from 1850 ZL TV was S9. From 2100 VK8, 3, ZL2, VK1 and VK3 b/s. ZM8OY 2139 5x1, VK4, 2, 5, 7, 4, ZM8OY 519 2252.

27/12 ZL4TBN/3 5x5 0300 SSB and FM, VK6KFD 0913 5x2, VK3, 7, 8. 28/12 VK4, 8, VK2BA 5x9 0338 ground-wave contact, 200km to Sydney, also VK2BKL 5x2, from 2041 to 2307 worked VK1 to VK9 and ZL1 to ZL4, also P29BH 5x3 2320. (That's quite a haul for less than three hours! . . . 5LP). 29/12 From 0000 VK3, VK7, VK2YVG 5x9 0020 at Broken Hill, short skip, VK6, 5, 8, 4 to 0636. At 2209, VK2BHO 5x9, VK9LC 2220, FK8AX 599 2256, FK8EM 5x9 2300. 13/12 YJ8RG 5x5 0141, VK9LM at 0147, ZL2, VK8, 4, 6, ZL2, VK5, 1, ZL3 to 0815. Also worked Andy VK6OX at 0303 5x9 +30 for the strongest VK6 ever heard, then VK6OX worked VK9LM and ZL2TPY!

1/1/86 P29ZEF 4x1 0220, VK6, 8, 4, ZL2 to 0900. 2/1 VK1AA 5x1 0102, VK8ZCU 5x9 0113, VK4, VK2YVG again from Broken Hill 5x9 0742, VK5, 4, ZL2, VK3 to 0919. At 2103, ZL2CD 529,

ZL1ADP 5x1 2311. 3/1 From 0236 VK4, 7, 8, VK9LM 5x9 0307, VK6OX 5x7 0322, FK8AX 5x9 0333, VK5, 2 b/s, 4, 3, 7. From this point onwards the band started to taper off, some more openings each day, especially 5/1.

What can be gleaned from the above is the wide coverage with swings from VK4 to VK6, over to ZL, then perhaps FK8, back to VK4, a few more VK6s, then VK5, 7 and so it goes on. The ZLs were very consistent.

LORD HOWE ISLAND

Whilst I would prefer to distance myself from the original problem associated with QSL cards from the DX-pedition by Nev VK4ZNC, to Lord Howe Island where he operated as VK9LC, and later left equipment for Rudi VK9LM, to continue the operation, I cannot because my column carried the original request by Nev for a nominal donation of $5 for a QSL card. (Page 42, December 1985, AR).

After the success of the expedition, in which more than 200 six metre contacts were made, the flack began to fly around the country when those seeking QSL card for their contact found they were indeed being asked for $5. I believe Nev, when he says the fee was in an effort to offset some of the costs of the expedition rather than to make a profit, but many felt they were being held to ransom and were very vocal in their objections and steps were being taken to have the matter investigates at official levels.

I wrote to Nev outlining my objections to what he was doing. After initially refusing to change his mind, Nev did eventually agree to provide QSL cards for both VK9LC and VK9LM without any fees, in return for a SASE, and, in fact, I already have received my cards.

Depending on your viewpoint, you may or may not agree with what has transpired. I believe Nev did the right thing by changing his mind and that he did not really see the implications of his first moves. Generally speaking, VKs are somewhat notorious when it comes to supporting what can be a well intentioned expedition or similar, although they have come to the party on some occasions, so I assume Nev thought the money was the best way to overcome the problem.

I now hope everything will quickly return to normal without any recriminations towards anyone. If anyone wants to send a donation towards costs after recovering their QSLs, then this is a matter for them to decide as it will be quite different from paying for a QSL. Whatever the final outcome, Nev has indicated he will probably make another expedition to ZM7 or ZK2 at the end of 1986, for another new country on six metres.

DJ5CQ/VK9LM

A matter quite unrelated to that above has been brought to my attention by the receipt of a long letter (photo- copied) from Hans J Rueckert, c/- Trader Nicks, Lord Howe Island, NSW. 2898, which tells the sad story of a series of disasters which have befallen Rudi, formerly VK9NM/LH, and VK9LM since 4th December 1985, and holder of DJ5CQ in Germany. The writer of the letter is a SWL on Lord Howe Island.

Rudi was making his second expedition to LHI and was mainly centred on the HF bands, 80 metres in particular. (Hence I sent a copy of the letter to the HF DX editor, as it could concern the HF fraternity more so than VHF operators). Up to December 1985, more than 12 000 contacts had been made on all bands in both CW and SSB.

Briefly, due to various storms, Rudi lost four 80 metre antennas before one was made to stay up!. On 6th November, Rudi complained of being unwell and finally SWL Hans took him to the doctor, who diagnosed a serious illness which eventually required a RAAF medical team, with four doctors and staff, to come to the island 700km from Sydney, in a Hercules aircraft. Within an hour, a complete operating theatre had been set up in the three bed hospital and a successful life-saving operation had been performed on Rudi, who on 10th November was taken to a hospital in Sydney by the RAAF team. He spent four weeks recuperating, before returning to LHI.

On 6th January, Rudi's mother was admitted to hospital with a serious illness and his wife, on the return journey, had a minor accident due to ice on the roads. However, one of the worst blows was the receipt of a message on 8th January, via VK2BZW, that on the night of 6th January his building, which included his home base DJ5CQ radio shack, all his equipment and QSL cards was burned to the ground. The bungalow had just been built and in his haste and excitement to return to LHI, Rudi forgot to insure the building.

It is a sad twist of fate that after Rudi giving 30 000 contacts on two expeditions, should now, on returning home, have nothing. The small community of 270 people on LHI have already subscribed $250 to help the rehabilitation process. If anyone would like to assist this fund I would be happy to pass contributions direct to Germany for Rudi.

BRIDGING THE BIGHT ON 3.5GHz

Reg VK5QR, has sent me details of the latest efforts between himself and Wally VK6WG, in Albany, on 3.5GHz.

"The initial contact occurred on 25th January 1986, between 1300 and 1400UTC when reports were exchanged on 3.5GHz. Both were 539. At 0730 through 0755, on 26th January 1986, we were again in contact for 25 minutes. This time I gave Wally 569 (peaking to S7) and he gave me 559. The signals remained audible for some time after we returned to 70cm.

"Wally was using a 3-4 watt amplifier, built by Andy Furlong WA2FGK. This was driven from a 19.064MHz crystal oscillator into a Microwave Module tuned to 384MHz into a tripler to 1152 through a filter to another tripler (VSE66M) to the amplifier via another filter. The antenna was a four foot (1.2m) dish fed with dual horn 3,5 and 2.3GHz. His receiver was home built with a pre-amplifier.

"Here at VK5QR, I used a similar crystal oscillator (I built them both and sent one to Wally) into a MM Module tuned to 384MHz, then on to an amplifier to about 20 watts into a tripler to 1152, about 12 watts through a filter to another tripler (VSE66P) to 3456MHz at possibly 2 watts through another filter to a 10 foot (3m) dish fed with a log periodic for 1296, 2304, and 3456MHz. Receiver set-up the same as Wally. The secret for success would appear to be first and foremost, a common frequency, secondly Wally had a little power amp and thirdly my dish.

"Once we established contact on 2304 it was a simple matter for me to turn the dish exactly on Wally and to net the two frequencies by tuning the crystal slug in the MM. Thus we had common 1152 drivers and by listening to the third harmonic on our 3.5GHz receivers we knew just where to look. So effectively did this system work that I heard Wally switch on his transmitters! ! ! First try! !

"The future? ? ? Maybe 5.7GHz if we can get the diodes."

Congratulations to Reg and Wally for the establishment of a **World Record** for the 3.5GHz band. Distance is 1885km or 1171 miles. These contacts add another page to their achievements for the distance which has now been bridged by them on 52, 144, 432, 1296, 2304, and now, 3456MHz. Quite an effort . . . 5LP.

THE MICROWAVE BANDS

Des VK5ZO, has been in touch to say that following my request three months ago for those interested and/or operating on the microwave bands to get in touch with Des, no one has done so!

Des is certain there is some 10GHz activity at least in all States, even VK8, where Neil VK8ZCU has equipment for that band, but no one to work! In fact, VK3KAJ and VK3ZBJ recently had a contact over 90km on 10GHz and are trying to achieve 200km.

If you have microwave equipment, please let Des know as he would like to compile a register which, in turn, might lead to an increase in interest and activity. His address is: *Des Clift VK5ZO, 5 Netley Road, Mount Barker, SA. 5251.*

AURORAL CONTACTS

A strange set of conditions prevailed on Sunday, 10th February (actually 9/2 by UTC time) at 2155, when Doug VK3UM, carried out a scatter check on 70cm and found aircraft enhancement signals to Gordon VK2ZAB, in Sydney, were weaker than normal, around S2. At 2212, the aurora started with garbled SSB and strange CW signals. Most activity centred on 144MHz. David VK3AUU, alerted me by phone and on firing up found VK5NC, in Mount Gambier S9+, but barely readable, VK5ZDR and VK5RO, who normally are barely discernible with those beam headings were equally as strong. These three, plus VK5ZPS and VK5NY, made the going very difficult due to the area of the band they were occupying. I heard VK2DDC, VK1VP, VK3AUU, VK3AUG, VK3AOS and another VK3Y ? ?, but was unable to work any, mainly I guess, because of similar local QRM at their locations.

VK5NC worked VK2ZAB, VK2XJ and quite a few others. VK3UM worked VK1BG and others. VK7'G, VK7ZOO and VK7ZJG, at least were on from Tasmania, others included VK3KEG and VK3AUU, who apparently worked VK7JG, on 70cm. It appears there were a lot of other stations on from Melbourne, but I could not hear them from here. Some auroral signals were still being heard in Melbourne as late as 0100. At VK5LP, the signals were gone by 2230 or soon after.

Such activity does not happen very often at our latitudes, but gave an indication of how spectacular contacts could be made and which we read about occurring with some regularity in the UK and Europe. All this added some cream to the cake after all the enhanced two metre activity of the just completed Es season.

MOONBOUNCE FOR EVERYONE

The heading appears in December 1985 *QST, The World Above 50MHz* and is over the photograph of the *slightly large array* at W5UN located south of Houston, Texas. Here are some of the details:

"The slightly large array *consists of 32 specially built KLM 17LBX Yagis with 75ohm feed-point impedance. The H frame is constructed from 97 feet (29m) of Rohn-25 tower with eight 40 feet-long (12m) crossarms, each holding four of the Yagis. The array is dual point mounted, with the main pivot mast being rotatable. Both masts are about 30 feet (9m) high. Actual azimuth rotation is accomplished by turning the rear wheels on the mobile platform (an old Ford pick-up chassis), which holds the moving mast. The mobile platform travels on a circular, non-tracked, dirt pathway. The array requires almost an acre for full rotation, 360 degrees of rotation takes about 6.5 minutes.*

"Early tests with the array indicate that it is performing about as was predicted. The main power lobe (E plane) beamwidth is about 3.75 degrees wide. The H plane beamwidth is about 6.5 degrees wide. Good noise readings are being obtained from the sun and other extra-terrestrial sources. The first weekend on the air resulted in working about 40 stations on random calls via the moon.

"I am hearing my own echoes using an IC251 without any pre-amplification and with a single Yagi antenna. Average equipped stations should be able to hear me if they point their antennas towards the moon. I call CQ a lot on 144.008MHz on weekends, beginning on my moonrise when the moon is in northern declination. Stations running 160 watts or more and using a good antenna such as the Cushcraft Boomer or KLM 16LBX should be able to get enough power to the moon for me to hear them. For stations which cannot elevate their antenna schedules will have to be on moonrise or moonset when they aim toward the moon".

That Dave's creation is working I can testify as I have now heard him at least 12 times during EME weekends, etc. In view of his comments regarding 160 watt stations, I may be tempted to give him a call from VK5LP one day.

THE ROSS HULL CONTEST

A few comments are reaching my desk about the Ross Hull Contest, hopefully there will be some more soon. Most are commenting on the seeming reluctance of some operators to give numbers. These may be newcomers who do not understand what it is all about or those who are not happy with

the present rules and are resisting participation anyway. Nevertheless, it is being spelled out that the loss of the Contest would see a dramatic drop in interest on the VHF bands during the Es season.

Whatever you think, let me hear from you and send in those scoring tables, the more we have the better to judge where improvements can be made.

50MHz STANDINGS

The 50MHz Standings as published by Bill Tynan W3XO in November's *QST* are interesting in that the top place is now held by VE1YX with 77 six metre two-way confirmed countries, second place goes to JA4MBM with 76 countries, then follows K8WKZ with 71, K5FF 69, VE1BNN 68. There are just over 330 call signs listed overall, and the list now includes those nominated in the Australian list from Amateur Radio, which was headed by David VK2BA at the time of printing. I note that Bill decides his positions by the number of countries claimed, whereas, I prefer it to be determined by the countries confirmed. Just a matter of how you see it, I suppose.

GENERAL NEWS

I have received an interesting screed from John Allen VK5UL, giving an outline of his activities on the five metre band before WWII and leading on to his radar involvement during the war. It is a bit long to include this month so I will let you read it next month.

As a result of my contact with Chris ZM8OY, on 16th December 1985, I have now received his QSL which says that Raoul Island, in the Kermadec Group is an active volcano with up to six quakes a day, most of which are never noticed. It is mainly covered by the Nikau Palm, the home of the colourful Tui bird.

January 1986 *CQ ham radio* from Japan (via VK6RO), TVQ0 video on 46.250MHz was heard in Japan on 14 days during October and November; ABMN0 — six days; ATV0 on 19/11; ZL TV on 20/11, and VK6OX was worked by JA1VGN on

Dick Norman VK2BDN with 10GHz FM transceiver mounted behind a 40cm dish with 28dB gain.

23/10. So it seems signals still cross the equator occasionally.

Last month I mentioned the exploits of the VK2 10GHz gang. This month I include a photograph of Dick VK2BDN, with some of his equipment.

Closing with the thought for the month: *"A smile is a curve that can set a lot of things straight"*. 73 The Voice of the Hills.

AR

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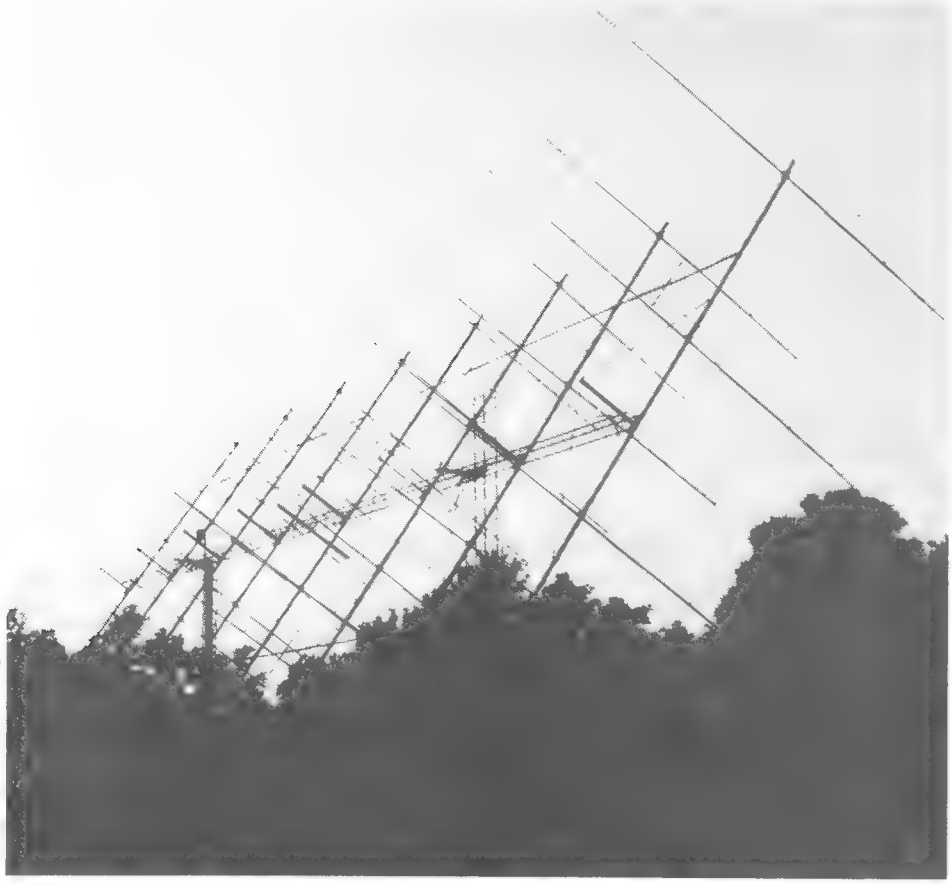

Photograph courtesy QST magazine

The large array at W5UN.

TEST EQUIPMENT

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AR86

How's DX?

Ken McLachlan VK3AH
Box 39, Mooroolbark, Vic. 3138

As DXers, quite a number of us become very complacent regarding our hobby and consider the lure of DX is the only facet of the privileges that our license allows us.

This fact was brought home to me recently when I attended an open day at the Victoria Police Training Academy. This display, which is becoming an annual event, is used to serve two main purposes — to attract recruits and as a Public Relations exercise depicting many of the aspects of the police departments that are used to detect and prevent crime. The organisation was a credit to all participating squads who had spent many hours in preparation. VK3s should look out for it early next year.

After viewing many of the exhibits, it was interesting to note the popularity of communication-orientated working displays and particularly the interest shown by the younger generation in the teletype, FAX, two-way communications and computer orientated sections. These are said to be the most up-to-date and best police communications in the Southern Hemisphere.

As amateurs, we have all these interests and more at our fingertips and the problem is how we can introduce it to the younger members of our society. I am sure that if it was more widely promulgated by individual members and we had the facilities to stage an open day of such magnitude or maybe join another organisation that was doing a PR display, in our WICEN capacity, our increase in studies and the issuance of licenses would be dramatic and form the basis of a career in electronics for many.

CALL BOOK INTEREST

Much interest has been shown by members, both in Australia and overseas, who obtained the 1985/1986 Call Book with the cover depicting the massive antenna system which belongs to Ian VK3MO. The system seems to be capable of receiving and putting an S9++ signal anywhere around the globe.

I have discussed the interest shown with Ian, and of course I have asked him about an article for AR, but Ian feels that he would like to do some more work and tests on the system before giving an article to this magazine.

Ian (as well as others), is still working on the project, and conducting innumerable tests with his all home-brew equipment which was detailed in January 1983 AR page 23. For those amateurs who have not read the article or have just joined the Institute, Ian uses three-four element Yagis at 14, 29 and 43 metres above ground. The tower is fully rotatable using a chain drive located at ground level and supported by 38mm polyester rope attached to bearings at the three levels.

The beams were designed by W0OKC for 14MHz and scaled to 440MHz by Dr Jim Lindsay, of the Denver Research Institute, where they were compared with others on an antenna range, altered and rescaled up to 14MHz. Ian's objective is that with the use of his home-built computer, when he taps in 'G' the antenna rotates to the best path and automatically alters the antenna phasing for the best signal by sending out a short burst of coded RF every minute during the QSO to maintain optimum reception to both parties. The ideal would be have a similar set up at each end.

A PROMISE

Next month, I will present an exclusive interview with Jim Russell VR6JR, who has shared an island of tropical paradise with its 64 inhabitants for a period of eight months, whilst working on a special project. Jim made time to work nearly 12 000 contacts. Do not miss this interesting interview.

TOGA

Sal IT9AZS, after his Sao Tome operation of S90AS, has been signing 5V7AS and it appears he has company, according to some reports. The company includes two other amateurs Enrico IT2RLX and Fernanda, who is a YL. All QSLs go to IT9AZS.

Ron 5V7RW, who is missionary, will be returning to the USA around the end of July.

160 METRES

During the CW-WW 160 Metre Contest Don G3XTT, worked 51 countries, heard another 11 and notched up Worked all Continents in eight-hours.

Paola I2UIY, in one-hour and 34 minutes on the 10th January, worked 45 W and VE stations. *So what* many may say; but Paola was only using a 430S to an inverted 'Vee' at 13 metres to the apex.

Akito JA5DQH/NN7S, showed up from Macau late last year. Akito is recognised as one of the top operators using this band. He holds 160 Metres DXCC and on this occasion WAC was obtained in just two days of operation from Macau. I think yours truly will migrate to that band, when time permits!

DISAPPOINTMENT

From a number of overseas sources, it appears that there is no interest in our hobby in South Yemen. There is no club, SWLs or anyone interested in the privileges we enjoy, including the authorities. It appears that all the inhabitants within the borders of 7O have more important things on their minds in their day-to-day life and it will be a long time before we hear any genuine resident station signing from this area. What a pity! Yet it has been activated — read on . . .

SOUTH YEMEN ACTIVATED

This heading may prompt readers to say I am trying to pull an April Fool's Joke, but this column is based on fact not fiction.

During recent and very necessary evacuations at short notice, Alain 6W1HB, was caught up in handling traffic. During a lull in the messages to the vessels anchored at a safe distance off-shore Don VE3HGN, got a TU2 to alert Alain to a contact on 14.103MHz at 1800UTC, 18th January.

Congratulations Don, but I will be surprised if it will add to your DXCC tally.

Apparently, it looks grim as to hopes of an accredited operation as many plans have been jeopardised by different factions in that part of the world of late, though keep listening. The impossible has happened before and caught many unawares. Lee KH6BZF, has a saying *'expect the unexpected . . . and the expected'*. Thanks Lee, and I wish that I shared your optimistic approach, philosophy and quick wit.

PIRATES

This unfortunately seems to be becoming a regular feature of this column, however it's felt that the readers should be made aware of such operations.

The members of the 4U1VIC Club are not happy with the flattery of being so active — they are receiving cards when they were not even on the air!

It appears the call was illegally used on 5th May 1984 (21MHz), 13th/25 and 26th June 1984 (14MHz), 8th November 1984 (3.5MHz), 31st March 1985 (14MHz) and 8th May 1985 (14MHz). These dates have been based on cards received.

My personal opinion is that someone has very little to do that they have to resort to using a rare call to get QSOs or is it just one or two people that have acquired equipment and are just being pestilent, even to the degree of causing deliberate QRM to this stations authentic transmissions, going as far as to playing their own transmissions back to them. It appears that in this case 'small minds have access to big equipment'.

TEN MHz

Bruce 3A0GB, has been quite active on this WARC band. I would be interested to know how many DXers have migrated to this band. For that matter reports of activity on all WARC bands from enthusiasts would be appreciated.

ANTARCTICA

Angel WA2VUY, has written an excellent precis of the LU and CE allocations in the Antarctica, which was printed in QRZ DX and is reprinted for readers interest.

Angel, firstly points out some things to remember.

(1) Always ask the operator for his or her EXACT location, eg The name of the base, the specific island, the island group, latitude and longitude. (This would not be recommended to be done in a pile-up of eager stations thought, otherwise a lynching party may appear at your doorway with your feedline . . . VK3AH).
(2)Note that few countries issue call signs for the Antarctic Region that enable DXers to distinguish between the different DXCC 'countries'. As a matter of fact many operators make no distinction between, lets say, the South Shetland Islands and the Antarctic Continent. As far as the operators are concerned they are located in Antarctica, and that is cold enough for anyone!
(3)Argentina assigns the letter 'Z' as the first letter of the SUFFIX of stations located in the Antarctic Region. Prefixes heard or worked include LU1Z— through LU5Z— and AZ5Z—; the call sign AZ1A appears to be a new combination, and an exception to the rule.
(4) Chile assigns the CE9 PREFIX to stations in Antarctica. For the amateur the suffix is meaningless.
(5) Note that more than one island comprises the South Sandwich Islands, South Shetland Islands and South Orkney Islands. South Georgia is singular, as in Antarctica.

Angel, has gathered the following information from maps, QSLs and similar documentation and suspects that it may still contain some inaccuracies, therefore any documentation that would confirm that this list is incomplete would be appreciated by Angel direct or via your scribe who will gladly pass the information on.

ARGENTINA

SUFFIX	BASE NAME	LOCATION	COUNTRY/NOTES*
1ZA	Destacamento Naval Orcades	Laurie Island	*S Or. Also AZ5ZA*
1ZA-B	Base Teniente Matienao	(see 2ZD)	*Ant*
1ZB	Destacamento Naval Isla Melchior	Palmer Arch	*Ant*
1ZC	Destacamento Naval Deception	Deception I	*S Sh*
1ZD	Base Gen San Martin	Grahamland?	*Ant*
1ZE	Estacion Cientifica Almirante Brown	Puerto Paraiso Bay	*Ant [1]*
1ZF	Destacamento Naval Bahia Esperanza	Trinity Peninsula	*Ant [1]*
1ZG	Base Gen Belgrano 2	Coats Land	*Ant*
1ZI	Estacion Cientifica Teniente Jubany	King George I	*S Sh [2 6]*
1ZL	Destacamento Naval Ellsworth	Ellsworth Station	*Ant. Also 4ZZ*
1ZM	Base Esperanza	Trinity Peninsula	*Ant [1]. Also 1ZF?*
1ZR	Destacamento Naval Petrel	Dundee I	*Ant [3]. Also 5ZR*
1ZR-M	Base Esperanza/Cabral	Trinity Peninsula	*Ant [1]. Also 1ZF?*
1ZV	Base Esperanza	Same as 1ZM	. . .
1ZW	Base Gen Belgrano 2	Coats Land?	*Ant. Same as 1ZG?*
1ZX	Base Gen Belgrano	Filchner Ice Shelf	*Ant*
1ZZ	Base Cientifica Alferez Sobral	Filchner Ice Shelf	*Ant [4]*
2ZB	Base Primavera	Grahamland	*Ant. Near 1ZE*
2ZD	Base Teniente Matienzo	Near Larsen Inlet	*Ant [1]*
2ZR-M	Base Gen Belgrano 3	Berkner I?	*Ant*
3ZR-M	Base Sobral	Filchner Ice Shelf	*Ant. Same as 1ZZ?*
3ZY	Estacion Cientifica Corbeta Uruguay	Morrel Island	*S Sa [5]*
4ZS	Base Aerea Vicecomnodoro Marambio	Snow Hill Island	*Ant*
4ZZ	Destacamento Naval Ellsworth	(see 1ZF)	. . .

CHILE

PREFIX	BASE NAME	LOCATION	COUNTRY*
CE9	Base Antarctica Arturo Prat	Greenwich Island	*S Sh*
CE9	Base Antarctica Teniente R Marsch	King George Island	*S Sh*
CE9	Base Ant Presidente Frei Montalva	Nelson Island	*S Sh*
CE9	Base Ant Bernando O'Higgins	Trinity Peninsula	*Ant*

Notes: 1 Grahamland, 2 King George 1 and is also known as 'Isla 25 de Mayo', 3 Joinville Group, 4 At the foot of the Argentina Range, 5 Thule Group, 6 LU3ZI and LU5ZI are operated from the LU1ZI location.
** ARRL DXCC country abbreviations: Ant = Antarctica, S Sa = South Sandwich Island, S Sh = South Shetland Islands and S Ork = South Orkney Islands.*

ARUBA

Bob KQ2M, made in excess of 12 500 contacts during his short stay. He is adamant that it should become a separate DXCC country and has documentation to submit that will prove it. I may yet be proved wrong in my prediction about its new country status.

ILLEGAL OPERATIONS

It appears that a number of C53. ./MM call signs have appeared on the bands. The Gambian Licensing Authorities, along with many other authorities DO NOT ISSUE licenses that can be used for maritime or aeronautical operations. In fact there are only two legitimate EL Maritime operators to my knowledge.

TRAVELLING

Ghis ON5NT, a very keen DXer as mentioned in a special article last month, has successfully completed the Advanced FCC examination and has the call sign AA4OI. He is travelling around CX, LU and CE, and hopes to obtain a license to become QRV from these locations — and I hope to get a story for this column.

OGASAWARA ISLANDS

The island is presently activated by the Tokyo University Amateur Radio Club under the call of JA1YWX/JD1. All QSLs to JA1YWX or JM1LPN.

DX CLUBS LIST

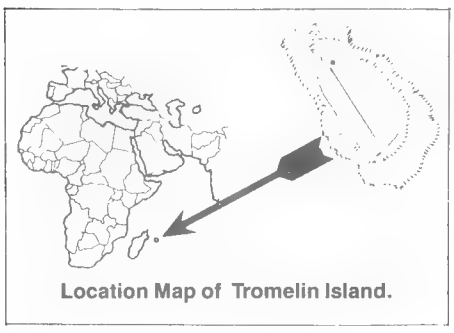
Bob W5KNE, Editor and Publisher of QRZ DX, is compiling a list of **ALL** DX clubs and would appreciate details of any you know or belong to. Bob will make the list available to all requesting the information when it is completed.

TROMELIN ISLAND

This is one of France's many tiny possessions that shows up as a dot on a map of the Indian Ocean, has become a weather station and is located about 400km off the north-east coast of the Malagazy Republic.

This fauna and flora sanctuary is about one and half kilometres in length, sand covered and scattered with bushes.

The island is administered by the Prefect of Reunion Island and there is a small airstrip that is used for transportation of the rotating of meteorological crews from other outposts such as Juan de Nova, Europa and Gloriosa.



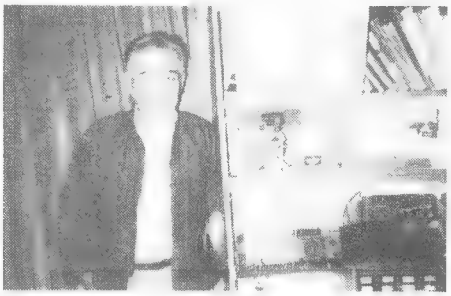
Location Map of Tromelin Island.

ANDAMAN ISLANDS

Deena VU2HMD, who operated from this rare country last June appeared again in January. Apparently there is a transceiver installed in the Andaman Beach Resort Hotel, however no authorisation seems to be forthcoming, so give it a miss as regards a QSL.

TAIPEI

A lot has been said of late about Feng BV0DA, ex XW8BP. It is interesting to note that logs in various forms, due to the intrepid operating habits Feng had to use before he fled the country, are obtainable from Massy JH1ARJ, for the next three months then the logs will be returned to Feng.



Feng in his "shack" with his new call.

MARRIED IN INDIA

Shanthina VU2GO, well-known to DX operators world-wide, became a married woman on 21st August 1985. The monotone reproductions depicted do not do justice to the colourful pictures supplied of the wedding but are reproduced for the benefit of her many friends in this country.

BITS AND PIECES

GB2SDD was the special call for St David's Day. QSL to GW4HOQ. * * Note the QSL information for Rudi VK9LM, is now via DJ5CQ or OE1ZL. SASE or two IRCs on an AIRMAIL endorsed envelope. * * 4K1J, quite active on 40 metres CW. The two operators that have surfaced so far are Vic and Slava, and they advise to QSL via UQ2GAG and UA1BJ respectively. A big signal on CW, could it be from the main transmitter and/or its associated antenna system? * * Have patience — Joe W3HNK, a gentleman 53 years young and a QSL Manager for 23 years with 225 amateurs in his stable, has a broken QSL report writing arm. Get it in order soon Joe. Good luck in your convalescence friend. * * V3DA was John W3UM. All QSLs to the home call. * * BY4RN is quite active and has acquired a beam and linear! * * Watch for St Pierre et Miquelon. Ralph hopes to operate from this location from around the first week in July for a short period. * * It is sad to note the death of well-known DXer Tom K3TG, an instigator of getting the station 4U1VIC established. * * Ed, operating as VP5EE, has been quite active on the low bands. Others from the call areas of 5H3, 5N0 and 5T5 have also been quite active. 5H3 has been represented by 5H3s CE, HM and VB. JR8BUU/5N0, YU3KI/5N0 and DF3IT/5N7 have been holding the 'fort' in 5N0, whilst Lothar 5T5SL has been flying the flag for Mauritania. * * 9J2LM, is purported to be a pirate. Wait and see is the advice. * * TV5SDP and TV6SDP were operating from a telecommunications exhibition in Saloon-de-Provence during late February and early March. * * TV6BFI is a special call sign allocation presently in use until the 30th June to commemorate the bicentenary of Marc Sequin, a French engineer of note who lived from 1786-1875. * * A DX net to listen to on 14.212MHz from 1400 to 1530UTC is under the control of SV1PL and EA6BR. * * Joe OD5BP, is occasionally active from Lebanon. * * Wolf Y39XO, is active from the German Democratic Republic using the call of Y61Z on 1.821 or 1.831MHz from 0300 until his sunrise. * * The eighteen resident amateurs on the Galapagos Islands have formed a radio club and there are hopes to get them DX-orientated and provide many with a new DX country, as it is still high on the wanted list in many countries.

THANKS

Sincere thanks are extended to the following: The Editors of weekly, bi-weekly and monthly newsletters including the ARRL NEWSLETTER, BARG, CQ-QSO, DX FAMILY FOUNDATION NEWSLETTER, INSIDE DX, JAN and JAY O'BRIEN'S QSL MANAGER LIST, KH6BZF REPORTS, LONG ISLAND DX BULLETIN, NEWSLETTER OF THE VIENNA INTERNATIONAL RADIO CLUB, QRZ DX, RSGB DX NEWS and THE WESTLAKES AMATEUR RADIO CLUB NEWSLETTER. Magazines including, BREAK IN, cqDX, JA CQ, JARL NEWS, KARL NEWS, QST, RADCOM, VERON and WORLDRADIO.

Members who have contributed include VKs 2HD, PS, EBX, 3YL, 4AIX, 6HD, NE and G3NBC. Overseas amateurs include AH2BE, G1EOD, HI8LC, KB6OAW/KH2, ON7WW, WB6GFJ and ZLs 1AMM and AMN. Thanks to one and all who have made this column possible.

QSP

50TH ANNIVERSARY

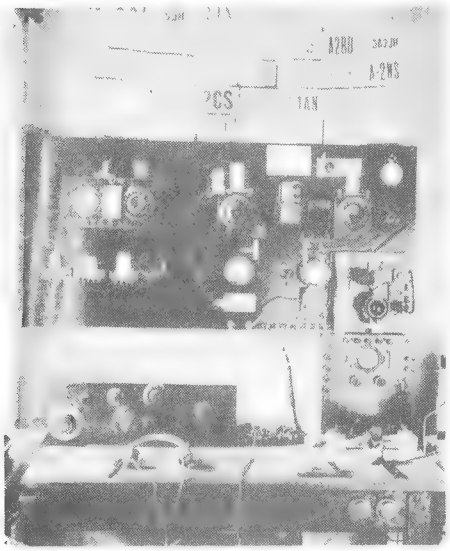
This year will mark the 50th anniversary of the radio society, Radio Amateur du Quebec, the CQ Worked All Zones Award and the 6L6 beam-power vacuum tube. Happy anniversary to all three.

75 AWARD RECIPIENTS

The following radio enthusiasts are recipients of the WIA 75 Award.

CERT NO	NAME/CALL SIGN
459	A B Bryson ZS2OM
460	Michael Sciacca VK2PSP
461	Wilfried Lohnert DL4GBA
462	Gunter von der Ley DJ6NI
463	Wilhelm Schneider OE3WQB
464	Robert Kaegi HB9KL
465	Manfred Vogt DJ2MN
466	Jean-Michel Huard F6IFE
467	Robert Graumann OE6GRG
468	Josef Feistauer DL3FD
469	Heinz Gobbels SWL DE1HGA
470	W A Donald VK7NRV
471	Georg Mirus DL1MM
472	Felix W Serr DJ6LQ
473	Ursula Rummel DK8GE
474	H Jans Fauzy YB6MF
475	Sigeo Isizaki JA1SVV
476	Sigeo Isizaki JO1RTJ
477	Sigeo Isizaki JA1TGU
478	Sigeo Isizaki JR1BLX
479	Brian Kirkby VK6NKB
480	Marvin W Alnutt W7AGE
481	R Bedford VK3BPG
482	R C Milne VK3KEL
483	Darren Hibberd SWL
484	Eike von Stillfried KJ2KA
485	Rolf Wanke DK2MH
486	Carl Huether KM1H
487	Greg Bateman VK1BAT
488	Mike Garrison KB6EXI
489	G Visser VK7DQ
490	L K Collier VK2VZB
491	Rainer Tuschen DE1RTA
492	Ad Mens PA3CYX
493	Helmut Hoffmann DJ7EV
494	Tadashi Magai JR1BLX
495	Paui Tams VK2PMN
496	Dennis St Ruth VK2EMF
497	Ron Hollywood VK4ARH
498	Bill Fanning VK3DWF
499	V Hearne VK3CQP
500	M Harris VK4NIF
501	Paul Peacock VK2PPP
502	Wally Morphett VK7WX
503	Murray Bloomfield VK3DOV
504	Mick Schmidt VK5BVM
505	Reg W Ross VK3YD
506	Wilton P Wells VK3PAL
507	Ernst Keil SWL OE1-3045
508	Hans Mey DL5KP
509	J F Hanran VK4JH
510	Peter Marmet HB9DCZ
511	Harold E Burt KJ9O
512	Michel Krideras SV1RK
513	Kazumi Ueda JA3EDD
514	Dennis L Miller G4UCB
515	Ewald Schulte DL4JL
516	Janti Silman YD0MGM
517	Harri Ludolph DL4FBZ
518	Neville Spry GW4KGR
519	Mavis Stafford VI3KS
520	Eng George Craiu YO3RF
521	Con Carlyon VK4BID
522	W J Cross VK2BCW
523	George Shuttler VK6OQ
524	Kevin Jones VK4AKI
525	Russell E G Smith VK5KAK
526	Keith Sherlock VK2WQ
527	T A Allen VK7AL
528	Stuart Fairbairn VK2AYF
529	W G Shakespeare VK2AGF
530	Bruce R Bathols VK3UV
531	Gary Carroll VK3DOM
532	Gary R Baker VK6NRA
533	Harley D Anders Jnr KD7UH
534	H W Patterson ZL3TKX
535	Simon Anderson VK3KRL
536	J A Patterson VK2CJP
537	Roger D Harrison VK4MKY
538	Craig Cook VK3CMC
539	Steve Reeves VK2CSR
540	Frank D Barsanti VK2FDB
541	Bill Rice VK3ABP
542	Tony Mowbray VK2KAJ
543	Lindsay Collins VK5GZ
544	Terry N Pearson VK7KF
545	Dennis Scragg VK5NMS
546	John Bennett VK6RI
547	Max Hardstaff VK7KY
548	C K Williams VK3NCW
549	Tony Williams VK2DJW
550	W L Stevens VK4YN
551	G Hume VK2VR
552	Stewart Dick VK4NII
553	Giorgos Gexas SV1SL
554	Spyros Himakios SV8CS
555	Giorgos Antonopoulos SV8RX
556	Mixalis Krideras SV1RK
557	John Hempel VK5SJ
558	John Hempel VI5SJ
559	John Hempel VI5JSA
560	J A (Bert) Cusick VK3MQ
561	Helene Dowd VK7HD
562	B D Clark VK4KU
563	G Kaska VK3CGK
564	John E Daluas YB5NOF
565	Christina Soelistyowati SWL YC0GKK
566	David J McAulay VK3EW
567	Jeanette Ramsey VK2CJF
568	K M Wilmott VK2FKW
569	Hans-Jurgen Baumann DL5IC
570	Gunter Rohleder DL9NBR
571	Gerald Katz 4Z4ZZ
572	Zdenek Laznovsky OK1DZL
573	Alois Baumann DL2KBS
574	Svein Henriksen LA3PU
575	Tibor Erdos-M HB9CVT
576	D R (Max) Raicha 5Z4MR
577	S Nagayama JR2PAU
578	Haruhisa Yamagami JA1BND
579	Demetrios Diamandidis SV7NW
580	Kosta Kalaitzides SV7LO
581	Wilhelm Kohout OE3OU
582	E F Davies VK6ED
583	J S Svendsen VK3NJS
584	Paul Kehoe VK3KPK
585	M Smirnow VK2NKN
586	John Goldfinch VK4FNQ
587	Neil Watt VK3XNW
588	
589	Takashi Magata JE3JBM
590	Darren Mitchell VK2PXO
591	Stan F Porter 7Q-001
592	Conrad A Thompson N7DUO
593	John Hempel — WIA SA Div for VK75A
594	Chin Pak Kooi 9M2CW
595	Werner Becker DK9KE
596	Werner Becker-Fritz EA8OR
597	Kenton A Dean S79WHW
598	Eleanor McGrath VK4BEM
599	Jean Beaudreault VE2EDL
600	Steve Lamb W9NUF
601	John Alcorn VK2JWA
602	J C Kemp VK5PXK
603	H J Masefield VK3NXQ
604	Nancy Baker VK2NPG
605	S Bush VK7EQ
606	A T Webb VK2UC
607	Steve Millington VK2ENB
608	R S Watkins VK6XV
609	Stephen Martin VK3DQL
610	Bev Hebiton VK6DE
611	Paul Walenski DF3EN
612	Sandeep M Kacharia VU2RGA
613	Franz Hennig DJ9HF
614	Claudine Hennig DL2HAC
615	Bernhard M Bohme DL9NCC
616	Moch Sidarta YB0BWI
617	Herbert Heinje DL8BAS
618	Herbert Heinje Jorg DL9BBQ
619	Herbert Heinje Adolf DK7BV
620	Jack Small ZL1KQ
621	Conrad R Canterford VK3PHW
622	Victor Martinelli 9H1V
623	Andrew Leach VK5ALF
624	A L Poore ZC4AP
625	Laurie Pritchard VK4BLE
626	Willy Vogel HB9CUW
627	Shigemitsu Ganda JA8MPV

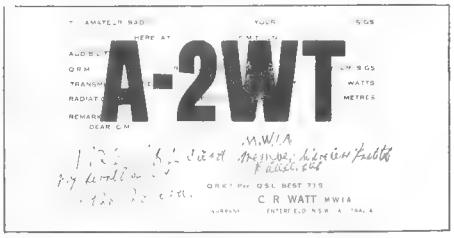
Congratulations are extended to all recipients.



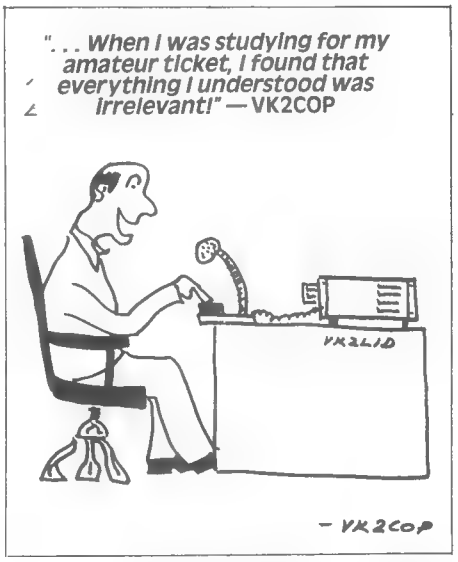
MID-20s ERA

The accompanying photograph features the shack of OT Russell VK2WT. Above the equipment, many QSL cards from past amateurs of the period can be seen. Many call signs will be familiar to Old Timers, no doubt.

Russell's first valve equipment was a two-stage oscillator, push-pull amplifier using UV201 valves, a detector receiver using a UV200 soft valve and a UV201 amplifier. The period was around 1925-26. High tension B batteries with a six volt accumulator for the filaments provided the power.



VK2WT's first QSL card — 1925-26.



Contests

Ian Hunt VK5QX
FEDERAL CONTEST MANAGER
Box 1234, GPO, Adelaide, SA. 5001

CONTEST CALENDAR

APRIL

5- 6	*WW SSTV Contest*
9-10	*DX-YL to North America YL CW*
12-13	*IBM QSL Party*
16-17	*DX-YL to North America YL SSB*
19-20	*ARCI QRP Spring CW*
26-27	*Swiss Helvetia Contest*

MAY

3- 4	*County Hunters SSB Contest*
10-11	*USSR CQ-M Contest*
17-18	*Michigan QSO Party*
17-18	*ARI International Contest (Rules this issue)*
24-25	*CQ WW WPX CW Contest (see below)*
27-28	*1986 CLARA AC/DC "Mystery" Contest (Rules March issue)*

JUNE

21-22	*1985 VK Novice Contest (Rules will appear in May issue)*

I had not included the CQ WW WPX SSB Contest in the Calendar for 29-30th March. I trust that this will not inconvenience anyone. I do not claim to provide an exhaustive list of contests for each month and, in fact, I only try and provide as good a guide as possible as to what is on.

The rules for the CQ World Wide WPX Contests are the same as for last year, see page 43, April 1985 issue. It would serve little purpose to repeat them again since they are well established world-wide. Following are a few points to keep in mind.

The duration of these contests is from 0000UTC on the Saturday to 2400UTC Sunday. Only 30 hours out of the 48-hour contest period may be used by single operator stations. Off-times can be taken in up to five periods. Multi-stations can operate for the full 48-hours.

The QRP section has become very popular and it is worth your attention. The definition of the prefix multiplier is spelled out in detail and is not to be confused with the interpretation used by the CQ WPX Award program. Also, bear in mind that stations in call areas different than that indicated by their call signs are required to sign portable.

The multiplier is determined by the number of different prefixes worked and is counted **only once,** regardless of how many times it is worked on other bands.

Another point to keep in mind is that, in the multi-operator, single transmitter category, only one transmitter and only one band may be used during the same 10 minute period. Picking up a new multiplier on another band during the same time period is definitely prohibited.

An alphabetical/numerical check list of claimed prefixes is a requirement and must be included with your log.

An updated trophy and plaque awards list now shows over 40 awards, so it could well pay to be in there competing. Deadlines for logs are 10th May for SSB and 10th July for CW. Be sure to indicate SSB or CW on the envelope. All logs to be posted to: *CQ Magazine, WPX Contest, 76 North Broadway, Hicksville, NY. USA. 11801.*

I am indebted to Frank Anzalone W1WY, for the comments supplied regarding the CQ Contests and also for the other contest material which he provides me on a regular basis.

You may note the complexity of scoring for some of the overseas contests and then you perhaps will form an opinion to the effect that the rules for contests originating here in VK are not so complicated after all.

REMEMBRANCE DAY CONTEST 1985

Well, as indicated by the announcement in last month's issue, the gremlins were really active in connection with the publication of the details and results of the **Remembrance Day Contest,** which appeared in February's magazine. At times it may appear that one has a system and that it is working well, however, as in this case, let just one sheet of paper become mixed up in the pile and a disaster may ensue. I would hesitate to describe the problems which have arisen as a result of such a happening as actually being a disaster as the mistakes made can be corrected, still, such is most embarrassing and I certainly offer my apologies to all concerned and in particular, to the members of the New South Wales Division. I also apologise most profusely to the VK1 Division and offer my wishes that they will try again in the Remembrance Day Contest and gain the success which they would wish for. Now, without further ado I will now provide amended details of results which were incorrect and list those logs which were omitted.

VK2 High Frequency Section A (Phone)

C'SIGN	SCORE				
KL	*628*	*ZL*	*365*	*ARQ*	*207*
BFR	*571*	*BAM*	*353*	*AMU*	*206*
DCL	*521*	*AGF*	*304*	*BTP/P*	*205*
ANO	*494*	*PS*	*285*	*CZX*	*204*
BO	*487*	*PD*	*221*	*RX*	*202*
DVU	*440*	*BQS*	*220*	*NW*	*201*
DYW	*412*	*DQP*	*210*	*AOA*	*199*
EJW	*390*	*WI*	*208*		

It is necessary that the Divisional Scores be amended with the inclusion of the logs listed above, as well as additions to the VK6 Divisional Score to include VK6YF — 105 points, HF Phone; VK6EB — 28 points, HF Phone; VK6EB — 60 points, VHF Phone.

The number of licensees listed for each Division was not correct with a major discrepancy occurring in connection with the VK3 figure. Other amendments are: VK7JE with 90 points operated HF CW and the call sign VK3CCG in the HF CW Section should be amended to read VK3CGG.

AMENDED RESULTS — REMEMBRANCE DAY CONTEST 1985

The formula for the determination of results for each Division is: Total Points/Total Divisional Licenses multiplied by Weighting Factor.

VK1 — 5369/307 x 1.08 = 18.88
VK2 — 12600/4825 x 7.81 = 20.395
VK3 — 14189/4473 x 5.96 = 18.90
VK4 — 6602.2492 x 5.83 = 15.44
VK5 — 16666/1749
VK8 — 122/170 } *x 1.31 = 11.46*
VK6 — 12552/1414
VK9 — 519/8 } *x1.26 = 11.58*
VK7 — 2871/569 x 1.27 = 6.408

NOTE: VK8 points and license totals are added to VK5 and VK9 points and license totals are added to VK6.

Licensees per Division are as follows:
VK1 — 307; VK2 — 4825; VK3 — 4473; VK4 — 2492; VK5 — 1749; VK6 — 1414; VK7 — 569; VK8 — 170.

The corrected figures for percentage of licensees submitting logs in the contest are:
VK1 — 14.3; VK2 — 1.92; VK3 — 2.28; VK4 — 2.68; VK5 — 7.49; VK6 — 6.79; VK7 — 3.87.

In producing these percentage figures I have done so this time using the actual number of entrants in the contest, as against the number of logs submitted. I feel that these figures may be useful when an overall look is taken at the final results of the contest such as I proposed in my report to the Federal Convention in 1985.

I had promised previously that I would provide details of comments from entrants in this contest. Almost without exception they indicated general satisfaction with the contest although some did suggest minor changes to the rules. Here are some examples:

Had a marvellous time sharing VK75A in middle of a contest. Of particular interest was the contact of VK75A with VK3WIA — VK4BPI.

The proposal is as follows — that Western Australia, for the purpose of contests such as the RD Contest, be divided up into two parts; eg north and south of the 26th parallel to enable contact points to be made between the two zones — VK6MY on behalf of the Peel Amateur Radio Group.

The RD Contest is a little different to the others in that it is the friendly contest — VK3KFI.

I do appreciate being able to submit a receiving log — L30371.

The contest from Christmas Island was hard work for the three operators, as om 40 and 80 metres we could hear all the mainland states but could not break through their high noise levels — VK9XZ.

May I preface my comments by saying that I realise, regardless what you do with the rules, you will never please everyone — VK6PV.

However, I would like to see a two-hour, instead of three-hour break on VHF — VK6YF.

Congratulations on the setting out of the rules in July AR — best they've been for a long time. Thanks — VK6WZ.

In a small community where there are only six or eight dedicated VHF operators . . . it is not easy to make a minimum of 25 contacts — VK6DM.

Thanks for bringing the club calls back into the RD — VK6HU for Scout Radio VK6.

The one point — one contact rule has shown to disadvantage those in remote areas . . . I'm sure that if my QSO was worth more than a "local" QSO some effort would have been made to pass numbers — VK6KY.

Congratulations on the best organised RD Contest for a considerable number of years — VK6AR.

My first attempt at a contest with my full call . . . found out why it's called the Friendly Contest — VK6ATE.

Let's get back to the idea of promoting QSOs between as many call areas as possible by awarding multipliers for the number of call areas worked per band — VK6AOU.

The separation of HF from VHF was a good idea — VK6ED.

VHF and HF categories. I think this is a very good idea . . . differential points. I have never enjoyed the HF section since the different points were abolished. When VK4 was worth five points and ZL six points, there was much striving to contact the rarer stations. I would like to see the differential points return — VK6FC.

The present rules seem to be reasonable enough and the separation into categories and sections is a good idea — VK4YG.

Am delighted with the new rules which make HF and VHF two separate categories. The HF rules, in my opinion, are great, however, you were a but tough, I feel, on the VHF section by only allowing contacts three-hourly. Surely now the sections are split it doesn't matter how far apart they are, I would suggest one hour is fine providing the categories stay separate — VK5FF.

Please could consideration be given to giving a higher score to contacts to non-neighbouring states to encourage people to work weaker stations — VK5YO.

Have been in every one except 1975, when I was overseas — VK5RK.

VHF should come down to two-hour repeat period . . . I do not advocate the original one-hour period — VK5EA.

I found the going on 80 metres was extremely difficult, in fact the worst I have ever encountered with almost continuous QRN — VK5ATN.

This time it is Certified Mail — VK3AH.

The rules themselves were quite acceptable and if not changed would suffice for the future — VK3BRZ.

Two hours between contacts, this I feel would have given us a better result on VHF — VK3BGS for Moorabbin and District Radio Club.

As always, I enjoyed the RD, but lower activity does reduce the interest — VK2BHO.

Enjoyed the spirit of the thing . . . did not have occasion to find fault with anyone's operating procedures . . . good fun . . . think the silent keys to whom we dedicate the contest would have been pleased — VK2COP.

I would appreciate if you would consider as last year, a two-point score for CW for the 1986 contest — VK2DQP.

If the handicapping is done correctly, not only should all the call areas finish with the same totals, but every contestant also will tie for the only place — VK2BQS. (Jim's letter contained a great deal of other useful comment. Don't want to contemplate such a radical rule change, Jim. 5QX).

If the ZLs made an effort by being more active, would it be possible for them to win the trophy? — VK2ANO. (Oh! No, John, No. 5QX).

The XXX is a new rig and I found the selectivity a bit disappointing — or is a signal 1kHz away asking too much? — VK2KL. (Depends how strong it is Ian. 5QX).

The use of dual call signs should be encouraged as it meant more points for other stations hence encouraged more participation — VK1KAL, President VK1 Division.

Incorporate at the beginning of the rules a list of names and call signs of those men and women we are to remember — VK6WT.

Why not keep the scoring to four points to ZL, five points to P29? Like the rules previously — VK5MX.

I enjoyed this contest better than last years, but I still feel the time between VHF contacts is a little too long — VK5KCI.

A novice in the north-west would possible have a hard time making 20 contacts under present conditions — VK6PF, WA Divisional Secretary.

One letter recently received points out a most unfortunate incident. I quote from this letter in such a way as not to identify the offending station in a public manner.

I thought you might like to hear why a log was not entered by myself . . .I listened o the XXX Divisional Broadcast and before the completion of the "Last Post" VKXXX was off and onto his second contact . . . Having been taught in the Army during WWII to remain silent until the "Last Post" had finished, I immediately, in disgust I might say, packed up my sheets, turned off my set and forgot all about the RD Contest for 1985. XXX's actions show that he has lost sight of what "Remembrance" may mean to some people . . . Far be it for me to 'make a mountain out of a molehill', but, to me, his actions leave much to be desired — VK7NGH.

I agree whole-heartedly with Greg's sentiments and cannot help but say that it is always saddening to see an increasing general lack of respect in this in this day and age for some of the higher values which should be cherished.

I would like again to commend the majority of operators who submitted logs of quite reasonable standard in this Remembrance Day Contest.

Congratulations to all those who took part and particularly to the VK2 Division members who participated despite little support from their compatriots. A letter from the VK2 Division Federal Councillor queried the fact that only one VHF log was listed for that Division. I can assure you that only one log was submitted in that category which met the required minimum number of contacts.

I have also received several letters from operators from the VK2-area whose logs were among those not listed in the top 23 shown above. With only one exception, the letters were polite to a point and I do appreciate the kindness of those writing in the way they have been considerate even when they may have suspected I had made a mistake. I will endeavour to reply to these letters as quickly as possible. Based on my experience in this Remembrance Day Contest, I will be considering a few possible minor rule changes, as well as adopting a slightly different method of dealing with all the logs. This should be a case of third time lucky and having gained all this experience, I will then find that it will be my last Remembrance Day Contest as Federal Contest Manager.

RESULTS FOR 1985 ROSS HULL MEMORIAL VHF/UHF CONTEST

The overall top scorer is **Les VK3ZBJ.**

This year there has been a reasonable increase in the number of logs submitted for this contest. There were 11 competitive logs accepted, four check logs and one log which was, unfortunately, not acceptable in the form presented. However, it is quite obvious that this contest is not well supported and I wonder just what one has to do to bring about some reasonable increase in interest. I would point out quite clearly, that all claims of interest and participation are completely nullified when the Contest Manager still sees only a mere handful of logs submitted. The matter must be looked at with the consideration in mind that there are many, many other stations who can operate on the VHF bands and upwards. There has been some insinuation that the Federal Contest Manager does not understand what goes on at these frequencies. This I publicly refute insofar as an understanding of VHF, UHF and microwave is concerned as it is in this region I spend a great deal of my time working professionally. Together with the logs, I have received a reasonable amount of comment from those who did enter. Most of the comment is obviously meant to be helpful, however a small percentage of same is both elitist in nature, as well as being insulting. I suggest that the amateur ranks have traditionally refused to accept the elitist approach, thus I will take little notice of such an approach. I am sure that we are mostly proud of our tradition to give even the newest amateur a fair go and a helping hand.

As the FCM, I am responsible to the Federal Council, via the Executive, for my actions and I naturally follow WIA policy in carrying out my allocated duties. Should anyone have strong feelings on such matters as not only this contest, but any of the WIA sponsored events, I would suggest that you work through your proper channels as a member of our national body and contribute to informed discussion via the democratic forums of our organisation.

So much for my 'soapbox' treatment, but sometimes such comment is necessary. The various suggestions worthy of consideration contained in the correspondence received will be carefully considered when both submitting my annual report to the Federal Convention and when trying to solve the problem of even further modification to the rules of this contest. Having said all this, I now provide a listing of log details.

SECTION (I) PHONE — all bands

CALL SIGN	PERIOD AND POINTS OVERALL	7-DAY	2-DAY
3ZBJ	*7942	2763	821
3YMP	3699	1401	*441
3KAJ/3	3171	*1439	421
8ZLX	*2114	887	266
3ATN	1679	1011	329
3AUU	1606	782	250
5LP	*1129	764	229
1ZAR	*547	361	139
4JTW	*282	212	64

Check logs were received from VKs: 3ZXY; 4PU; 5ZO and 7ZAP.

SECTION (III) 52 and 144MHz only

2QF	*1626	913	308
3YRP	*67	—	67

The asterisk * indicates a certificate winner. Certificates are awarded to the highest overall score in each state and for the highest seven-day score in each state. In Section (III) both the highest score and runner-up receive certificates. No entrant may receive more than one certificate.

A log was submitted by VK3ALK, but was not accepted due to not being correctly laid-out; vis no listing of scores for each period and without a cover sheet as required by the rules.

The neatest log that I have seen in recent contests was submitted by VK3YMP. If there was a separate award for the neatest log of the year, he would certainly have earned it.

Not the least of congratulations for his extremely large score for yet another year goes to Les VK3ZBJ. I will be arranging for the certificates to be produced as soon as possible.

Well, that is it for another month. I hope that my corrections and other work done for this issue will be pleasing to a majority of our readers. For now 73, Ian VK5QX.

ARI ITALIAN INTERNATIONAL CONTEST

This contest is conducted from 1600UTC, Saturday 17th May 1986 to 1600UTC, Sunday 18th May 1986 (every third full weekend of May).

World-wide amateurs must contact Italian stations including San Marino, Vatican City and SMOM.

CLASSES — single operator CW; single operator SSB; single operator mixed mode; multi-operator single transmitter; SWL. Multi-operator stations can use both CW and SSB.

BANDS — 28; 21; 14; 7; 3.5; 1.8MHz. Italian stations are allowed to use 1.830-1.850MHz on 160m and 3.613-3.627 and 3.647-3.667MHz on 80m for SWL participants.

EXCHANGE — RS/T and QSO number beginning with 001. Italian stations will send RS/T and two-letters (Province; ie 599MI, 59VE, etc)

QSO POINTS — Four points for every QSO with an Italian station. The same station can be contacted on the same band once on CW and once on SSB.

MULTIPLIERS — One multiplier for every Province per band and San Marino, SMOM and Vatican City are additional multipliers.

FINAL SCORE — The sum of QSO points from all bands multiplied by the sum of the multipliers from all bands.

Logs — Must contain date; time in UTC; band; mode; call sign; report sent; report received; QSO points and new multipliers. Please use a separate log for each band. Include a summary sheet with your call sign, class of participation, QSO points and multipliers on each band and final score. The usual declaration that the rules of the contest have been followed is required. Do not forget your full address, your equipment description and your comments. Logs to be posted within 40 days from the end of the contest to: *Giorgio Beretta I2VXJ, via Sciesa 24, 20135 Milano, Italy,* or to the *Contest Manager, c/- ARI, via Scarlatti 31, 20124 Milano, Italy.*

PENALTY — Logs without a summary sheet and a declared score will be used as check-logs. A declared score of five-percent more than the actual score will mean disqualification.

AWARD — Special awards will be issued to the top five of every class of participation. A certificate will be awarded to the top scoring operators in each country and for each category.

WAIP — The Worked All Italian Provinces is issued to all amateurs for contacts with 60 different Provinces. This will be issued upon a written application in the logs, and a separate list of QSOs for the award. A QSL card is not required for a Contest QSO. The cost of the WAIP Award is 10 IRCs.

COMMONWEALTH CONTEST

Participants in the Commonwealth Contest are reminded that the deadline for receipt of logs in the UK is 14th April 1986. (See January AR). Awards of medallions will be made to the top-scoring VK amateur and to the state team of four who gain the highest aggregate score.

ARI

LZ DX CONTEST

The Bulgarian Federation of Radio Amateurs invites amateurs world-wide to participate in this contest.

The contest is held on the first Sunday of September, from 0000 to 2400UTC.

Frequencies to be used are 3.510-3.560, 7.000-7.040, 14.000-14.060, 21.000-21.080, 28.000-28.100MHz — CW only.

Categories: A — Single operator all bands; B — single operator one band; C — multi-operator/club station all bands only; D — SWL.

Exchange RST and ITU zone of the transmitting station.

Scoring: Each confirmed QSO with a LZ station — six points. One point for QSOs with stations in the same continent. Three points for all other QSOs. One station may be worked only once per band.

Multipliers: The sum of the number of ITU zones on each band.

Final Scoring: Sum of QSO points of all bands multiplied by the final multiplier.

SWLs score three points for two call signs and two numbers; one point for two call signs and one number.

Logs should be in standard form with separate logs are required for each band. A summary sheet showing zones worked on each band and a declaration are required. Logs should be posted, to Central Radio Club, PO Box 830, Sofia 1000, Bulgaria, Europe, not later than 30 days after the contest and the post-mark will be decisive.

Medals will be awarded to the top three scorers in each section.

Participants in this contest may apply for several Bulgarian awards when submitting their logs. See Awards column for rules of these awards.

VK1XX, with a score of 810 points, was a Continental Winner in this contest in 1984. VK3ANZ and VK4XA were participants but did not receive a placing.

ARI

EXPO 86

Following are ticket prices for Expo 86 for visitors who may be in Vancouver during the duration of Expo. Tickets include free admission to the 80 pavilions, plazas and theatres on site. Visitors can also ride the monorail, two skyrides and an intra-site ferry system without paying anything extra.

Season pass, until 1st May 1986 $139 — 2nd May to 13th October $169.

Three-day ticket $39.95 to 1st May — 2nd May to 13th October $45.00.

The above are adult prices, children 6-12 and over 65 years are half-price.

Awards

Ken Hall VK5AKH
FEDERAL AWARDS MANAGER
St George's Rectory, Alberton. SA. 5014

Here in VK5, we are celebrating the 150th anniversary of the founding of South Australia, and in particular, as already announced, there is an award for working the required number of VK5 stations during 1986.

On the other side of the world, the Zurich Division of the Union of Swiss Short Wave Amateurs (USKA) is celebrating 1986 as the bi-millennium of the town of Zurich, with a special certificate named the *Zurich — 2000 — Award.*

This award is available to any licensed amateur (or SWL), who, during the year 1986, works (or hears) the required number of stations in the canton of Zurich. Australian stations are required to work/hear four stations, two of which must be in the actual town of Zurich. The club station HB9Z counts as two contacts. Claim is by log extract only, no QSLs required, to be certified by two licensed amateurs, with the fee of SwF5 or US$3 or 4IRCs to: UKSA Sektion Zurich, Awards Manager, Fritz Zwingli HB9CSA, Eugen-Huberstr 25, CH 8048 Zurich, Switzerland.

AUSTRALIAN DXCC LADDER as at 31st December 1985

Number of current countries: 317
Number of deleted countries: 52 *shown as / after the current countries score.*

Those members whose keys have become silent since the last ladder was published are listed with their final scores.

Overseas members are included in brackets.

PHONE SECTION

315/49	Jim Rumble VK6RU
315/43	Tom Mulder VK6MK
315/34	Bram Jellett VK5AB
315/31	Keith Schleicher VK4KS
314/47	M Millowick VK5MS
311/17	Robin Lyon VK6LK
311/10	Gil Moody VK4AK
310/14	Ken Chiverton VK4VC
310/13	Fred Lubach VK4RF
309/20	Col Wright VK7LZ
309/11	Mike Bazley VK6HD
307/24	Austin Condon VK5WO
307/15	John Heine VK3JF
306/15	Bill Verrall VK5WV
306/10	Neil Penfold VK6NE
305/35	Bill Hempel VK4LC
303/40	Ray Baxter VK4FJ (SK)
302/5	Ken Jewell VK3AKK
302/4	Peter James VK3AWY
300/4	Syd Upperton VK2DFE
299/14	Laurie Werner VK5XN
299/13	Geoff Wilson VK3AMK
299/4	Hugh Spence VK6FS (SK)
295/4	Steve Gregory VK3OT
294/18	Arthur Johnston VK4PX
294/5	Frank Beech VK7BC
293/1	Jim Joyce VK3YJ
292/5	Ray Miller VK3RF
291/3	Gillian Weaver VK6YL
290/15	Charles Taylor VK4UC
289/23	D Kiesewetter VK2APK
288/4	Stephen Chamberlain VK6IR
288/2	I G Haworth VK6IH
286/5	Andre Everts VK7AE
283/2	John Woodings VK6AJW
281/27	Noel Hanson VK2AHH
281/11	Ron Glasson VK4BG
279/5	Peter Cosway VK3DU
279/4	John Nakulski VK3BLN
279/2	Rowland Bruce VK5OU
275/16	Cardie McQuillan VK3ACD

CW SECTION

310/43	Frank Hine VK2QL
306/33	Austine Henry VK3YL
300/45	Ray Baxter VK4FJ (SK)
299/31	Ivor Stafford VK3XB
293/24	Fred Lubach VK4RF
292/34	Reg Ross VK3YD
280/15	Mike Bazely VK6HD
279/31	Col Wright VK7LZ
278/25	D Kiesewetter VK2APK
277/21	Mavis Stafford VK3KS

OPEN SECTION

315/49	Jim Rumble VK6RU
315/43	Tom Mulder VK6MK
315/39	Keith Schleicher VK4KS
314/43	Austine Henry VK3YL
314/10	Gil Moody VK4AK
313/36	A Sharland VK4SD
312/18	Mike Bazely VK6HD
311/35	Col Wright VK7LZ
311/30	Fred Lubach VK4RF
311/19	Mary-Ann Crider (WA3HUP)
310/23	John Heine VK3JF
309/47	Ray Baxter VK4FJ (SK)
308/29	Austin Condon VK5WO
306/15	Bill Verrall VK5WV
303/31	Ivor Stafford VK3XB
303/4	Frank Beech VK7BC
302/5	Ken Jewell VK3AKK
301/22	Arthur Johnston VK4PX
300/4	Hugh Spence VK6FS (SK)
299/13	Geoff Wilson VK3AMK
298/4	Steve Gregory VK3OT
296/32	D Kiesewetter VK2APK
296/3	Ruthanna Pearson (WB3CQN)
293/16	Chas Taylor VK4UC
288/14	Ron Glasson VK4BG
287/43	Jack Anderson VK3JA
283/4	John Nakilski VK3BLN
278/35	George Luxon VK5RX
277/30	Noel Harrison VK2AHH
277/10	David Portly VK4DP
275/16	Cardie McQuillan VK3ACD

MAJOR MITCHELL AWARD

In Amateur Radio, January 1986, Joe gave details in this column of the Swan Hill District Radio Club's *Major Mitchell Award,* but at that time the art-work for the certificate had not been completed. It is now available and is reproduced this month. The certificate is 21 x 29.5cm, and has a red design with black lettering on buff paper, about 170gsm.

SWAN HILL DISTRICT RADIO CLUB VK3BSH—VK3RSH

Major Mitchell Award

SWAN HILL 1836 150th ANNIVERSARY 1986

AWARD No: DATE

This is to certify that

Sample

has submitted the required proof to attain this award.

Club President Awards Manager

Major Sir Thomas Mitchell 1792-1855

In 1836 Major Mitchell started on a journey from Sydney to a point on the Murray River near the South Australian border. After exploring the area, the next part of the expedition was to travel upstream along the Western banks of the Murray. On the 20th day of June, 1836, Mitchell and his party camped on a sandy rise, covered with native pine trees, close to the river. That night Mitchell was kept awake by the noise of waterfowl, mostly black swans. The next morning Mitchell wrote in his diary: "I therefore named this isolated and remarkable feature Swan Hill . . ."

TASMANIAN AWARDS

Details of these awards were published in AR as follows:

Tamar Valley Award — November 1984
Worked All Tasmania Award — December 1984
Reproduction of WAT certificate — April 1985

If you do not have access to these, please write and I will send you a copy.

By courtesy of Bob Richards VK7NAI, following is a list of the recipients of these awards to the end of 1985.

Worked All Tasmania

1 VK7NAI	80m/SSB	15 VK2NQM	80m/SSB
2 L30037	80m/SSB	16 VK2PKT	80m/SSB
3 ZL1AQO	80m/SSB	17 VK2NAN	80m/SSB
4 VK2KFV	80m/SSB	18 VK1BAT	80m/SSB
5 VK7NAX	80m/SSB	19 VK2BMH	HF/SSB
6 VK2JBM	80m/SSB	20 VK7NBF	80m/SSB
7 VK2PZC	80m/SSB	21 VK1MV	HF/SSB
8 VK3DMZ	HF/SSB	22 VK7NCP	80m/SSB
9 VK1ZL	HF/SSB	23 VK2DJJ	80m/SSB
10 VK7NAI	Nov/80m	24 VK2PXS	80m/SSB
11 VK3PYB	80m/SSB	25 VK2AKP	HF/SSB
12 VK7BD	80m/SSB	26 VK3DVF	80m/SSB
13 VK3PXC	80m/SSB	27 VK2NPJ	80m/SSB
14 L40018	SWL/Open		

Tamar Valley Award

1 ZL1AQO	80m/SSB	9 VK2PKT	80m/SSB
2 VK2KFV	80m/SSB	10 L40018	SWL
3 VK2CKW	80m/SSB	11 VK1MV	HF
4 VK7NAI	80m/SSB	12 —	
5 VK7BD	2m/SSB	13 ZL2259	SWL
6 L30037	SWL	14 VK2NAN	80m/SSB
7 VK2JBM	80m/SSB	15 VK2NPJ	80m/SSB
8 VK2PXS	80m/SSB	16 VK3CQP	80m/SSB

J 150 AWARD NETS

Effective 1st April 1986, the following changes have been made to the list published in February's AR.

40 metre phone: Mondays 7.086MHz at 0400UTC.
20 metre phone: Tuesdays 14.186MHz at 1200UTC.
20 metre phone: Fridays 14.286MHz at 1200UTC.

Also, please note the following additions:
160 metre phone: Daily 1.828MHz at 1000UTC.
160 metre CW: 1.806MHz. This channel is monitored daily, with frequency CQ calls when band conditions are favourable.

WORKED ALL ZONES AWARD sponsored by CQ magazine

This award is available to all licensed amateurs. The official representative of the CQ magazine in Australia is Doug Jones VK3NDY, 21 Sanday Street, Glen Waverley, Vic. 3150, from whom further information may be sought, and to whom all QSL cards must be sent for checking.

EX-SERVICE AWARDS

Last month, details were given of the award

program of the Royal Naval Amateur Radio Society. I subsequently sought corresponding information from the brother/sister organisations, the RAF Amateur Radio Society and the Royal Signals Amateur Radio Society. The quick answer is that the RAFARS and the RSARS awards are only available to members of the respective societies. So the first step, if you are eligible, is to join. The respective addresses are: *Administration Secretary, RAF Amateur Radio Society, Royal Air Force Locking, Weston-super-Mare, Avon, BS24 7AA, England* and *Mr A W W Timme G3CWW, 287 Gillroyd Lane, Heights, Linthwaite, Huddersfield, HD7 5SY, England.*

BFRA AWARDS*

Six attractive certificates are available from the Bulgarian Federation of Radio Amateurs to amateurs world-wide for two-way contacts or SWL reports on all bands/all modes.

Applications of a GCR list of claimed QSOs verified by two licensed amateurs, or the local club authorities specifying stations worked; date; time; band and mode, together with a fee of 10IRCs should be sent to the Central Radio Club, PO Box 830, Sofia 1000, Bulgaria.

Black Sea Award — *This award is valid for QSO/SWL reports after 1st January 1979, with 60 different amateur stations located in the countries bordering the Black Sea. A minimum of one QSO/SWL report with each of the following countries is an additional condition — LZ; TA; YO; UA6 and UB5.*

Sofia Award — *Valid QSO/SWL points after 1st January 1979 — 100 points for reports with amateur stations situated in the Bulgarian capital, Sofia. The calculation of the points has to be made from the following table.*

Each single contact is worth 15 points on 3.5MHz; 5 for 7MHz; 1 for 14MHz; 2 for 21MHz and 3 for 28MHz. NOTE: One contact per band irrespective of mode.

Some of the more active stations in Sofia are: *LZ1s — KAA; KAB; KDP; KPG; KSA; KSF; KVV; KWF; AB; AD; AM; AP; AQ; AU; BC; FF; FN; IA; JW; KX; LB; MS; NP; QG; QI; QP; SS; UA; UO; WV; WD; WJ; XL; XX AND ZQ.*

People's Republic of Bulgaria — *20 QSOs with different Bulgarian amateur radio stations; 10 with LZ1 and 10 with LZ2 irrespective of band.*

5 Bands LZ Award — *10 QSOs, one with LZ1 and one with LZ2 on all bands; 3.5, 7, 14, 21 and 28MHz.*

W 100 LZ Award — *100 QSOs with different LZ SWL stations during one calendar year.*

W 28 Z ITU Award — *This award requires QSOs/SWL reports with the following countries of ITU Zone 28: DL; DL7/W Berlin; FC/TK; HA; HB9; HB0; HV; I; IS; LZ; 9A/M1; OE; OK; SP; SV; SV5; SV9; SY; YO; YU; Y2; ZA; 9H; 4U1ITU.*

The award is issued in three classes:

Class 1 — 28 QSOs with different stations in 20 countries

Class 2 — 28 QSOs with different stations in 16 countries

Class 3 — 28 QSOs with different stations in 10 countries

An additional five QSOs with different LZ stations are also required.

** The above awards may be claimed when sending logs for the LZ DX Contest — see Contest Column for rules of this contest.*

AMSAT Australia

Colin Hurst VK5HI
8 Arndell Road, Salisbury Park, SA. 5109

NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR
INFORMATION NETS
AMSAT AUSTRALIA
Control: VK5AGR
Amateur Check-In: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.685MHz — Summer: 7.064MHz
AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday
14.305MHz
AMSAT SW PACIFIC
2200 UTC Saturday
21.280/28.878MHz

Participating stations and listeners are able to obtain basic orbital data, including Keplerian elements from the AMSAT Australia Net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGEMENTS

This month we are indebted to AMSAT-DL for the draft specification of the RUDAK Experiment to be flown on the Phase-3C spacecraft. As mentioned in last months column, I have edited this specification to make it presentable for this column. Those persons wishing to peruse the complete document can obtain one by contacting Graham VK5AGR, QTHR. At the time of preparing these notes, I noted a block of OSCAR 10 indicating that the RUDAK flight unit had been completed and the initial contacts made through it. It does indeed appear to be an interesting experiment to follow when Phase-3C is launched later this year. It is currently scheduled for September.

RUDAK SPECIFICATION DRAFT — 15th May 1985

General — This document has been compiled for, and on behalf of AMSAT-DL eV by Hanspeter Kuhlen DK1YQ.

Comments are invited and shall be addressed to the author: *H Kuhlen DK1YQ, Finkenstr 11, D-8011 Aschheim /nr Munich, FR Germany.*

Introduction — This document specifies the digital experiment scheduled to be launched on-board AMSAT OSCAR Phase-3C satellite with Ariane IV. Its main purpose is to provide a comprehensive documentation on the technical requirements and desirable features to achieve a common understanding among the equipment designers and manufacturers, as well as the satellite system group.

SATELLITE ACTIVITY FOR PERIOD 1 to 28 DECEMBER 1985.

1. LAUNCHES.

The following launching announcements have been received:

1985 111A	Cosmos 1705	Dec 03	USSR
112A	Cosmos 1706	Dec 11	USSR
113A	Cosmos 1707	Dec 12	USSR
114A	USA 13	Dec 13	USA
114B	USA 14	Dec 13	USA
115A	Cosmos 1708	Dec 13	USSR
116A	Cosmos 1709	Dec 19	USSR
117A	Molniya 3 27	Dec 24	USSR
118A	Cosmos 1710	Dec 24	USSR
118B	Cosmos 1711	Dec 24	USSR
118C	Cosmos 1712	Dec 24	USSR
119A	Meteor 2 13	Dec 26	USSR
120A	Cosmos 1713	Dec 27	USSR
121A	Cosmos 1714	Dec 28	USSR

2. RETURNS.

During the period forty three objects decayed including the following satellites:

1985-101A	Cosmos 1699	Dec 23
1985 109A	STS 61B	Dec 03
1985 111A	Cosmos 1705	Dec 17
1985-115A	Cosmos 1708	Dec 27

3. GENERAL.

As at 0142 UT on 14 Dec 1985 satellite ATS 1 was located at 82.61°W. Inclination 11.931°.

The experiment has been named *RUDAK* for **R**egenerativer **T**ransponder fur **D**igitale **A**mateurfunk **K**ommunikation.

The mission shall serve two purposes —

1 Point-to-point connections utilising the AX.25 link protocol

2 In as much as possible inter-connect Local Area Networks (LAN) to accomplish a low rate, time shifted data/message exchange. ie link between mail boxes.

The RUDAK Experiment shall support digital communication and trials with link control protocols and other processor based technique.

Highest possible flexibility with regard to future higher level protocols will be achieved by fully reloadable RAM-resident software.

System Description — The growing interest in digital communication in amateur radio necessitates a satellite channel for investigations on typical channel characteristics, as well as gaining experience in digital operating modes.

System Architecture and Network Configuration — A *network* is understood as consisting of a number of individual subscriber stations of equal priority in a widely spread area. Each station is equipped with RF facilities and a dedicated processor called terminal node controller, or equivalent S/W and a display and/or a general purpose computer. The latter is not required for QSO-type of communication.

At present, several local area networks (LAN) with a limited number of participants are in the process of realisation world- wide.

Most of these networks are supported by digipeaters acting as link controllers connecting amateurs with critical RF-links.

Except for the digipeater function, the applied protocol AX.25, Version 2.0/10.84 enables link establishment in accordance with level 2 of the ISO-OSI Reference Model providing sufficient commonality among the participants during the absence of an appropriate level 3 and 4 Transport Protocol.

Inter-connection of individual stations is the typical future however, the unique technical features of the packetised transmission become obvious only in a meshed network.

One important characteristic of a network is its ability of quick response to a service request, ie to send a QSO-packet from A to B (throughput).

On one hand, this response time is dominated by the applied bit-rate. For terrestrical networks, this parameter has been selected as 1200 bit/s to cope with bandwidth characteristics of standard amateur equipment by utilising straight-forward FSK for channel coding.

On the other hand, the conflict of sending packets into the net without precise co-ordination results in loss of packets due to collision.

For a subscriber having access to a common repeater in a relatively small area, most of these collisions can be avoided by a technique called Carrier Sensed Multiple Access (CSMA).

As soon as the receive logic of a TNC detects a data carrier on the channel, it holds back transmissions until the channel is free again.

The still-existing problem of congestion of pending packets is solved by generating random delay times for re-transmission. All this works fine in small areas where propagation delay times are negligible.

The next step is providing digipeaters on elevated geographical positions, hence visibility over a fairly great distance. Here the competition of non-organised packet transmissions reduces the throughput significantly to 18 percent, even under, otherwise optimum conditions. (ALOHA)

In other words, due to unavoidable collisions we achieve an effective data-rate of 0.18 * 1200 bit/s = 216 bit/s or less than one fifth of the applied rate.

Without additional agreement or co-ordination (slotted ALOHA), no improvement is possible.

In this environment, the RUDAK-Experiment shall add a long distance link between experimenters and LANs.

The main task of the regenerative on-board facility shall to be to decode and digipeat (encode) the received packets adding no particular intelligence at the first stage of the experiment. The throughput is limited by the capacity of the downlink bit- rate: 400 bit/s.

OSCAR-10 APOGEES
APRIL 1986

DAY #	ORBIT #	APOGEE U.T.C HHMM:SS	SATELLITE CO-ORDINATES LAT DEG	LON DEG	BEAM HEADINGS SYDNEY AZ DEG	SYDNEY EL DEG	ADELAIDE AZ DEG	ADELAIDE EL DEG	PERTH AZ DEG	PERTH EL DEG
1st April										
91	2109	1942:08	-26	119	112	5				
2nd April										
92	2110	0721:38	-26	294	250	9	256	20	264	40
92	2111	1901:08	-26	109	117	-2				
3rd April										
93	2112	0640:38	-26	285	254	17	261	28	269	49
4th April										
94	2114	0601:05	-26	275	259	25	265	36	274	58
5th April										
95	2116	0520:05	-26	266	263	33	270	45	282	67
6th April										
96	2118	0439:05	-26	256	268	42	276	54	296	76
7th April										
97	2120	0358:05	-26	247	273	51	284	62	336	82
8th April										
98	2122	0317:05	-26	238	280	59	297	71	45	80
9th April										
99	2124	0236:05	-26	228	290	68	324	78	71	72
10th April										
100	2126	0155:05	-26	219	310	76	15	79	81	63
11th April										
101	2128	0114:05	-26	209	356	81	53	74	88	54
12th April										
102	2130	0033:05	-26	200	46	77	70	66	93	45
102	2132	2352:05	-26	191	68	69	80	57	97	36
13th April										
103	2134	2311:05	-26	181	79	61	87	49	101	28
14th April										
104	2136	2230:05	-26	172	86	52	92	40	105	19
15th April										
105	2138	2149:05	-26	162	91	43	97	32	109	11
16th April										
106	2139	0928:35	-26	338					246	2
106	2140	2108:05	-26	153	96	34	101	23	113	4
17th April										
107	2141	0847:35	-26	328					250	9
107	2142	2027:05	-26	144	100	26	106	15		
18th April										
108	2143	0808:01	-26	319			244	-0	254	17
108	2144	1947:31	-26	134	105	18	110	8		
19th April										
109	2145	0727:01	-26	310	243	-3	249	7	258	25
109	2146	1906:31	-26	125	109	10	115	1		
20th April										
110	2147	0646:01	-26	300	247	4	254	15	262	34
110	2148	1825:32	-26	116	113	3				
21st April										
111	2149	0605:02	-26	291	252	12	258	22	266	42
22nd April										
112	2151	0524:02	-26	281	256	19	263	31	271	51
23rd April										
113	2153	0443:02	-26	272	261	28	268	39	277	61
24th April										
114	2155	0402:02	-26	263	265	36	273	48	287	70
25th April										
115	2157	0321:02	-26	253	270	45	280	56	307	78
26th April										
116	2159	0240:02	-26	244	276	53	289	65	3	82
27th April										
117	2161	0159:02	-26	234	284	62	306	73	55	77
28th April										
118	2163	0118:02	-25	225	297	71	340	79	74	69
29th April										
119	2165	0037:02	-25	216	323	78	30	78	83	60
119	2167	2357:28	-25	206	15	80	58	71	89	51

The afore-mentioned collision problem exists for the high elevated geographical position of the satellite in the elliptical orbit in particular.

Therefore, the uplink bit-rate has been selected to be 2400 bit/s to cope with this problem. Consequently, the RUDAK-Experiment will provide a throughput greater than achievable with elevated digipeaters using 1200 bit/s, but lower than well co-ordinated local area networks. (CSMA controlled).

It is well known that bit-rates of that order of magnitude are far from quantities of commercial relevance, thus it makes no substantial difference if 400 or 1200 bit/s are selected. Hence, the RUDAK-Experiment shall serve as a digital channel between individual stations world-wide and in as much as possible, connect networks. The latter may work better in practice than can be expected theoretically.

All of these assumptions are considered valid for a first phase of packet radio in low speed mode.

A major improvement can only be expected by significant increase in data-rates, eg 64 or even 128 kbit/s.

System Objectives — The main purpose of the RUDAK-Experiment is to provide a digital link for two-way amateur packet radio communication

OSCAR-10 APOGEES
MAY 1986

DAY #	ORBIT #	APOGEE U.T.C HHMM:SS	SATELLITE CO-ORDINATES LAT DEG	LON DEG	BEAM HEADINGS SYDNEY AZ DEG	SYDNEY EL DEG	ADELAIDE AZ DEG	ADELAIDE EL DEG	PERTH AZ DEG	PERTH EL DEG
29th April										
119	2167	2357:28	-25	206	15	80	58	71	89	51
30th April										
120	2169	2316:28	-25	197	54	74	73	63	93	42
1st May										
121	2171	2235:28	-25	188	71	66	81	54	98	33
2nd May										
122	2173	2154:28	-25	178	80	57	88	46	102	25
3rd May										
123	2175	2113:28	-25	169	87	49	93	37	105	16
4th May										
124	2177	2032:28	-25	159	92	40	98	29	109	8
5th May										
125	2178	0811:59	-25	335					248	4
125	2179	1951:29	-25	150	97	31	102	20	114	1
6th May										
126	2180	0730:59	-25	325					252	12
126	2181	1910:29	-25	141	101	23	107	13		
7th May										
127	2182	0649:59	-25	316			247	2	256	20
127	2183	1829:29	-25	131	105	15	111	5		
8th May										
128	2184	0609:02	-25	306	245	-1	251	9	260	28
128	2185	1748:32	-25	122	110	7	116	-2		
9th May										
129	2186	0528:02	-25	297	250	6	256	17	264	36
129	2187	1707:32	-25	112	114	-0				
10th May										
130	2188	0447:02	-25	288	254	14	260	25	269	45
11th May										
131	2190	0406:02	-25	278	258	22	265	33	274	54
12th May										
132	2192	0326:30	-25	269	263	30	270	41	282	63
13th May										
133	2194	0245:30	-25	260	268	38	276	50	294	72
14th May										
134	2196	0204:30	-25	250	273	47	284	59	322	80

over great distances. One of its most peculiar characteristics is the fact that the channel is not *transparent* as it is the case with the more familiar linear transponder, but it is *regenerative.*

Regenerative means full demodulation and decoding of the uplink signal and re-generating a new (composed) downlink signal with no change in packet content, but with added features. Full participation in this service shall be possible with reasonable ground station complexity, ie standard amateur RF equipment in conjunction with a terminal node controller and alpha-numeric display as a minimum.

The digital channel encoding and decoding will be achieved by means of a phase modulated subcarrier in the audio band. An external modem will provide the facility for generation of the subcarrier and its phase modulation as a function of the packet data stream.

In order to avoid a noticeable DC component in the transmission signal and to achieve a fast synchronism between sender and receiver under all data conditions, the data stream will be additionally encoded in Bi-Phase-L, also known as Split-Phase-L. (Spectrum shaping).

The ambiguity of the received and decoded BPSK-signal may lead to a 100 percent error condition due to inversion of the restored reference phase.

Hence, not the absolute phase condition provides the **0** or **1** information, but the difference of the phase of two consecutive bit periods.

Independent from the AGC of the main pass band the RUDAK-Experiment will get its own channel for operation within the constraints of the L-band transponder.

The link budget calculations as summarised in chapter 7.2 have been based on a link quality of Eb/No = 12db, which should provide an effective BER of 10^{-5}. This in turn implies a packet error rate of 10^{-2} for a 1200 bit packet.

There will be a continuous operation of the downlink beacon whenever the L-mode is activated. This under all detrimental circumstances leaves sufficient time to synchronise to carrier and bit-clock, even for the less skilled user.

In order to avoid long periods of idle pattern, which would be required to maintain synchronisation a sequence of cyclic repeating information packets will be inserted into the data stream.

These packets will contain identification details of the satellite, telemetry blocks in open language with extracts from the normal housekeeping TM with continuous updates, keppler and other orbit information, etc.

RUDAK Experiment — The hardware of the RUDAK-Experiment will be housed in a single standard metal box. Three interfaces interconnect RUDAK with the rest of the payload: *DC Power Supply; L-Transponder; Integrated Housekeeping Unit.*

It receives digital information from the dedicated BPSK demodulator as *data* and coherent *clock* signal. After processing the downlink signal is generated as data EXORed with the clock and routed to the phase modulator of the 436.020MHz transmitter.

Packet radio in its present form only provides error free communication by application of error detection and, if necessary, automatic request for re-transmission with an appropriate ARQ packet.

The RUDAK-Experiment shall support potential forward error correction (FEC) of at least singular errors.

Any possible link improvement by means of soft decision decoding versus hardware complexity will be investigated and if feasible be considered as a valid and desirable option. The entire packet processing (assembly/disassembly) shall be in compliance with the AX.25 link level protocol specification as released Version 2.0/10.84.

An appropriates packet management software shall organise incoming and outgoing packets, decide on priorities between user packets and onboard generated information.

Variable packet length with a maximum 128 bytes (optionally 256 bytes) shall be processed.

The packet management shall organise a queueing routine for all down-going packets with high priority for upcoming and less priority for onboard generated packets within remaining memory space as buffer area.

A closed loop self-test routine shall enable trouble-shooting on request of privileged command stations.

RUDAK shall otherwise operate without scheduled maintenance or similar permanent supervision. It shall not get blocked by erroneous interpretation of any data content.

Definition of User Equipment — Equipment required for *RECEIVE ONLY* 436.020MHz USB receiver, BPSK-Demodulator: 400 bit/s and TNC with AX.25 or equivalent. *FULL PACKET STATION* same as receive only plus a 1296.675MHz transmitter and BPSK-Modulator: 2400 bit/s.

AMSAT-AUSTRALIA NEWSLETTER

Graham VK5AGR, the National Co-ordinator of AMSAT-Australia is now producing a monthly newsletter containing updated satellite news, orbital predictions, keplerian data and operating hints and techniques. The objective of the newsletter is to keep the amateur populous informed on the latest information available and to realise funds for the funding of projects, or the purchase of an item/s of hardware for a future amateur satellite project, eg Phase-3C, Phase-4, etc. The cost of the newsletter is $15 and cheques made payable to the WIA (SA Division) should be forwarded to Graham VK5AGR, QTHR.

To date the newsletter has been a resounding success within Australia and comments from overseas amateurs, who have received copies from friends within Australia indicate that they would also like something similar in their own countries. The newsletter is basically an eight page compendium of the nitty-gritties that are relevant in the short-term, items that are out-of-date when printed in this column, etc. To date it has included some small computer programs specifically for satellite determination, the latest telemetry blocks from OSCAR-10 and OSCARs-9 and 11. If you are at all interested in Satellite communication, this newsletter is a must for you.

AR

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Education Notes

Brenda Edmonds VK3KT
FEDERAL EDUCATION OFFICER
56 Baden Powell Drive, Frankston, Vic. 3199

NAOCP THEORY

Following is a trial examination paper for Novice Theory. Answers appear at the end of the column.

1 A solenoid could be used:

a as part of a keying relay.
b to vary the frequency of a tuned circuit.
c as an impedance matching device.
d as a voltage stabiliser.

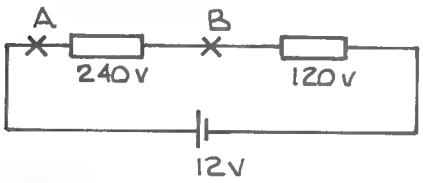
2 In an SSB transmitter the output frequency is obtained by:

a selecting any even harmonic.
b using multiplier stages.
c filtering.
d heterodyning.

3 The velocity of a wave in a transmission line is:

a 300 000 000 metres per second.
b 6 600 000 metres per second.
c less than its velocity in free space.
d more than its velocity in free space.

4 The potential difference between A and B is:



a 12 volts.
b 8 volts.
c 6 volts.
d 4 volts.

5 In a thermionic vacuum tube the high voltage is applied to the:

a cathode.
b heater.
c control grid.
d anode.

6 'P' type semi-conductor material has:

a surplus electrons.
b surplus 'holes'.
c a residual positive charge.
d a residual negative charge.

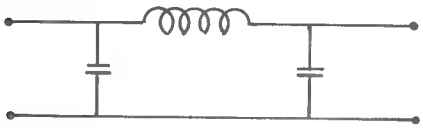
7 The modulation percentage of an AM transmission can be calculated from:

a carrier voltage and total power output.
b modulation voltage and carrier frequency.
c the pattern displayed on a cathode ray oscilloscope.
d carrier amplitude and modulation frequency.

8 Direct keying of an oscillator stage is likely to produce:

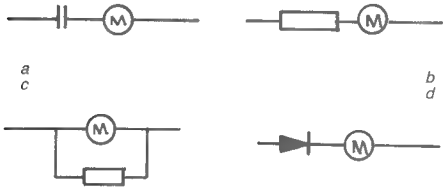
a key clicks.
b splatter.
c chirps.
d harmonics.

9 This filter is known as a:



a low pass.
b high pass.
c band rejection.
d band pass.

10 To increase the DC voltage range of a meter its circuit should be modified as shown:



a
b
c
d

11 The solid state equivalent of a gaseous regulator tube is a:

a bridge rectifier.
b FET.
c varicap diode.
d zener diode.

12 The detector in an 'AM only' receiver could be a

a diode.
b beat frequency oscillator.
c product detector.
d heterodyne detector.

13 The bandwidth of a correctly modulated AM signal is:

a half the modulating frequency.
b carrier frequency + modulating frequency.
c twice the modulating frequency.
d three kilohertz.

14 Interference caused by an amateur transmission is heard on a small portable broadcast receiver but not on a more elaborate receiver. The interference is probably:

a not noticeable in the higher sound output from the larger receiver.
b due to front end overload.
c due to parasitic oscillations in the final stage of the transmitter.
d reduced by using an external antenna on the small receiver.

15 The feedline on a Yagi antenna is connected at the:

a reflector.
b director.
c driven element.
d boom.

16 Which of the following is **not** an electrical insulator?:

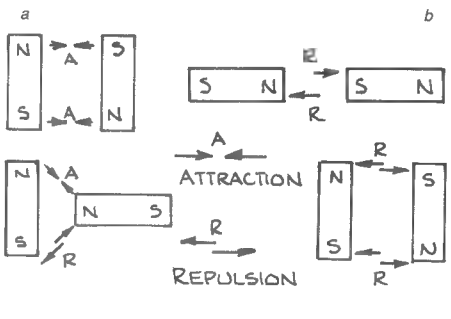
a mica.
b ceramic.
c sea water.
d oil.

17 The impedance of a transmission line:

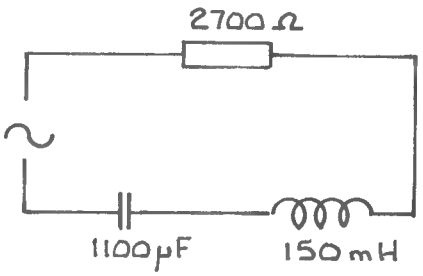
a is a maximum at each quarter wavelength point.
b varies according to whether or not it is terminated in a load.
c depends on the diameter and spacing of the conductors.
d is purely resistive.

18 If two bar magnets are placed close together, the forces will be as shown in:

A Attraction R Repulsion



19 The total impedance of the circuit will depend on the:

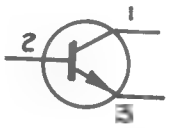


a input voltage.
b current flow.
c capacitor dielectric.
d applied frequency.

20 When a triode amplifier is operating in class A mode current flows:

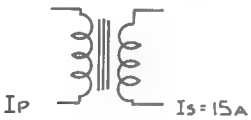
a all the time.
b for half of each cycle.
c for less than half of each cycle.
d whenever the grid voltage is beyond cut-off.

21 This diagram shows a:



a NPN transistor, terminal 2 is the gate.
b NPN transistor, terminal 1 is the collector.
c PNP transistor, terminal 3 is the base.
d PNP transistor, terminal 2 is the emitter.

22 If Np/Ns = 10/1, Ip will be:



a 0.15 amps.
b 1.5 amps.
c 15 amps.
d 150 amps.

23 The output of the mixer stage in a receiver will contain:

a both input frequencies and their sum.
b both input frequencies, their sum and their difference frequencies.
c the higher frequency and the sum of both input frequencies,
d the sum and difference of the two input frequencies.

24 The length of the sunspot cycle is about:

a 27 days.
b 4-5 weeks.
c 11 years.
d 27 years.

25 In a quarter wavelength vertical antenna the:

a feed point impedance is 73 ohms.
b voltage minimum is at the feed point.
c current maximum is at the tip.
d radiation pattern is substantially omni-directional.

26 For a given inductor, the reactance increases as:

a the applied frequency is decreased.
b turns are removed.
c the applied voltage is increased.
d the applied frequency is increased.

27 An appropriate power supply transformer for a Novice SSB transmitter should be rated at about:

a 10 watts.
b 30 watts.
c 50 watts.
d 400 watts.

28 The AGC line of a receiver functions by:

a varying the bias to the audio amplifier stage.
b varying the bias to an IF amplifier stage.
c limiting the swing of the S meter needle.
d limiting the RF amplifier stage output.

29 Differences of HF propagation patterns between night and day may be due to changes in the:

a density of the troposphere.
b sunspot numbers.
c velocity of the radio wave.
d degree of ionisation of ionosphere layers.

30 A keying relay may be used to:

a smooth the rise and fall of the symbol.
b pass traffic between two stations which cannot make direct contact.
c shorten the gaps between the symbols.
d avoid having high voltage on the key terminals.

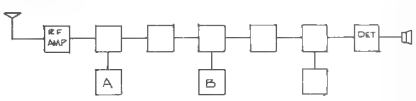
31 'Splatter' occurs in SSB transmission when:

a over-modulation causes the transmitter amplifier stages to become non-linear.
b two concurrent transmissions are separated by less than 3kHz.
c the oscillator power supply is not frequency stable.
d uneven harmonics are present in the transmitter output.

32 The sensitivity of a voltmeter is usually described in:

a ohms per volt.
b volts per amp.
c ohms per milliamp.
d watts per volt.

33 In this super-heterodyne receiver, blocks A and B represent respectively:



a local oscillator and beat frequency oscillator.
b two local oscillators on different frequencies.
c two local oscillators on the same frequency.
d carrier insertion oscillator and beat frequency oscillator.

34 The distance achieved by ground wave propagation:

a is greater at higher frequencies than at lower frequencies.
b can be extended by increasing the angle of radiation.
c is affected by the surface medium.
d can be increased by using frequencies above the MUF.

35 Harmonics from a novice operator on 28.100MHz causes interference to a nearby television receiver. The channel most likely to be affected will be:

a Channel 0 (45-52MHz)
b Channel 2 (63-70MHz)
c Channel 6 (174-181MHz)
d Channel 9 (195-202MHz)

36 The DC power input to the final amplifier of a transmitter may be determined by measuring:

a anode current and output impedance.
b collector or anode current and voltage.
c collector current and beta of the final transistor.
d output voltage of the power supply and total current drawn.

37 The ionospheric layer responsible for most hf refraction at night is the:

a F layer.
b F1 layer.
c E layer.
d D layer.

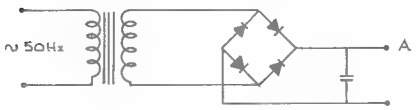
38 A balanced modulator is used to:

a suppress the carrier in an SSB transmitter.
b even out the modulation level of a receiver.
c match the modulating frequency to the RF.
d feed two modulating signals to a buffer stage.

39 A single conversion super-heterodyne receiver tuned to 3.620MHz, has a local oscillator operating on 4.075kHz. The image frequency will be:

a 455kHz.
b 910kHz.
c 3.165kHz.
d 4.530kHz.

40 The output at A will be:



a steady DC.
b DC with 50Hz ripple.
c DC with 100Hz ripple.
d 50Hz AC.

41 A 1.5V dry cell has a 2 amperehour capacity. Four of these cells connected in parallel would provide:

a 6V for 2 amphours.
b 6V for 0.5 amphours.
c 1.5V for 8 amphours.
d 1.5V for 2 amphours.

42 The PIV rating of a diode is 45 volts. This means that:

a a reverse bias of 45 volts must not be exceeded.
b 45 volts is the normal working voltage.
c the diode can withstand 45 volts AC.
d two of these diodes in parallel would have a PIV of 90 volts.

43 A varactor (varicap) diode:

a must never be reverse biased.
b can be used to vary the frequency of a tuned circuit.
c can be used in place of a light emitting diode.
d uses the capacitive effect to vary the circuit current.

44 A novice Am transmitter capable of operating on all HF novice bands has a crystal on 3.600MHz. The transmitter is likely to incorporate:

a at least two other crystal oscillators.
b a 455kHz IF.
c a heterodyning mixer and two other crystal oscillators.
d a switching system and multiplier stages.

45 Neutralisation of an amplifier stage is carried out:

a by applying negative feedback.
b to prevent parasitic oscillations.
c to reduce harmonic output.
d only if it is a linear stage.

46 As well as matching impedances between transmitter and transmission line, an antenna tuning unit:

a allows the antenna length to be adjusted for frequency changes.
b reduces the radiation of harmonics.
c improves the front to back ratio of a Yagi antenna.
d provides a good earthing system.

47 A transistor operating in a common emitter circuit:

a has a low current gain.
b has the base-emitter junction reverse biased.
c has a high 'beta'.
d must be an NPN type.

48 A 21MHz novice SSB transmitter, while unmodulated, causes interference to several nearby television receivers. The symptoms suggest the problem is due to:

a excessive drive to the transmitter's final stage.
b excessive transmitter output.
c receiver cross-modulation.
d parasitic oscillation in the transmitter.

49 The fuse in a mains operated power supply should:

a be rated at about three times the expected current.
b be in the earth lead.
c have a high impedance.
d be in the active lead.

50 The value of a resistor colour coded yellow, violet, red and silver is about:

a 4.7 kohms.
b 47 kohms.
c 4.7 ohms.
d 470 ohms.

ANSWERS TO NOVICE TRIAL EXAMINATION

1a	11d	21b	31a	41c
2d	12a	22b	32a	42a
3c	13c	23b	33b	43b
4b	14b	24c	34c	44d
5d	15c	25d	35d	45a
6b	16c	26d	36b	46b
7c	17a	27c	37a	47c
8c	18c	28b	38a	48d
9a	19d	29d	39d	49d
10b	20a	30d	40c	50a

CW FOREVER

You must have at times, thought into the past,
Where some things go out, while others last,
What comes to my mind is the old Morse Code,
That has weathered the storms from any abode.
To talk with one's fingers is surely an art,
Of any info you care to impart.
In most conditions the signals get through,
While the same about phone is simply not true.
Those dits and dahs cut through the trash,
Of nearby noise or lightning's crash,
To the sensitive ears of the ham receiver,
Who records this data with ardent fever.

He knows he's doing something unique,
(In such poor conditions, that's quite a feat).
To Roger the message that came off the air,
These Brass Pounders sure do have that flair.
They say Morse ops are a dying breed,
But don't despair, there's always that need,
That when conditions get rough for the new automation,
Rest assured, there'll be need for your station.
CW is dying? Believe it never,
This mode will be around forever and ever,
But one thing is sure, what we really need,
Is to relay our knowledge to the younger breed.
To carry the torch, long after we're gone,
To send Morse code through the air like a song,
When at last, Silent Keys pull that final lever,
We can rest in peace, it's CW forever.

From WORLDRADIO, January 1986

Intruder Watch

Bill Martin VK2COP
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW. 2077

Now is the time of the year when the final figures are available for the previous years Intruder Watch activities. I state them below for your information.

Total Number of Intrusions Reported	*7466*
Those in the Broadcast Mode	*4289*
Those in the CW Mode	*1208*
Those in the RTTY Mode	*1516*
Intruders who Identified	*843*
Number of Observers Supplying Reports	*51*
Number of Log Sheets Received	*543*

The breakdown of assisting Observers is as follows:

OBSERVERS	DIVISION	LOGS RECEIVED
1	**VK1**	*5*
12	**VK2**	*98*
9	**VK3**	*33*
15	**VK4**	*330*
6	**VK5**	*43*
3	**VK6**	*7*
3	**VK7**	*20*
2	**VK8**	*7*

WINNER ON THREE

The Intruder Watch scored three against the intruders in 1986 — a French Polynesian R/T service on the lower end of 40 metres was removed; an Australian broadcast station's fourth harmonic, which was being heard on the 80 metre band was dealt with, and the US FCC opened a case against a maritime mobile station which was passing commercial traffic on 20 metres, assisted by two US amateurs. (This traffic has now ceased).

So, at least three less sources of QRM are on the bands this year, due to the efforts of those who send in reports to the Intruder Watch.

QSL CARDS

Just in passing, those QSL cards that I sent to the ARRL, which I mentioned in last month's column, have not arrived back yet, so fingers are still crossed!

Those of you with RTTY facilities may care to fire-up on 14.024MHz, and see if you can find out who is there . . . it has been heard at 0646 and 0900-1200UTC.

CW AND SSB MIXED!

I recently had a complaint about SSB stations working on the CW segment of 15 metres. This is **not** Intruder Watch business, but it is unfortunate to see that people cannot observe the Gentleman's Agreement and WIA Band Plans, and avoid conflict with others in the hobby.

The intruder Y5K, an old friend ***(?),*** who works RTTY on 20 metres, has finally been caught at the receiving end, which was T7S on 13.342MHz.

The Voice of Greece, beaming to Australia on 7.095MHz, has now apparently moved to 7.420MHz, well out of our way, and one wonders why they did not operate there in the first place ? ? ?

NUPTIAL BLESSINGS

I don't know if I am letting *the cat out of the bag* on the next piece of news, but Robin VK7RH, the Tasmanian Intruder Watch Co-Ordinator, writes to tell me that he *"will be very busy this year, as he is moving QTH due to the fact the he is GETTING MARRIED!"*

Well, Robin didn't tell me not to say anything, so there it is. All the very best to you, and the future Mrs Harwood, Robin. I am sure I speak for all involved in the Intruder Watch.

Better go before I get chased away from the keyboard. See you all next month, and good DX.

AR

ARRL 75TH ANNIVERSARY

The ARRL Board have taken two actions regarding forward planning for the ARRL's 75th Anniversary in 1989. ARRL will offer to host the 1989 Triennial IARU Region 2 Conference. The criteria for selecting the 1989 ARRL National Convention was adopted. Final selections will be made at the Board's July 1986 meeting.

Australian Ladies Amateur Radio Association

Joy Collis VK2EBX
PUBLICITY OFFICER, ALARA
Box 22, Yeoval, NSW. 2868

The first quarter of 1986 is behind us — *Where did it go?*

It is pleasing to see ALARA continuing to grow and flourish, with increasing YL participation in every facet of amateur radio activity. We have come a long way from the days when a YL voice on the air-waves was a rare thing to hear.

This month I would especially like to congratulate ALARA's *Newsletter* editor, Marlene VK5QO, who was the recipient of the Alan Shawsmith Journalistic Award, 1985, for her article on the history of the VK5 Division of the WIA, October 1985 AR.

Congratulations also to Mavis VK3KS, who gained third placing in the CW section of the 1985 DX-YL to North American YL Contest. The prowess of Mavis and her OM Ivor, with the key is well-known, and as early as the beginning of February, they had both attained the necessary points on CW for the South Australian Jubilee 150 Award.

ALARA AWARD

The ALARA Award, with its lovely Australian wildflower theme, continues to be popular. See rules in December 1985 AR.

It has been suggested that from time to time we print an update of Award recipients, so accordingly here is the list from September 1985, to January 1986.

All endorsements are A3J and those marked * have one sticker.

NO	DATE 1985	NAME & CALL
109	5 Oct	**David Beecham VK2CDB**
110	5 Oct	**David Jewell VK0DJ**
111	21 Nov	**Ivan Searle VK5NSI***
112	21 Nov	**Des Hancox VK2AGA**
113	27 Nov	**Ross Wilson VK2BRG**
114	9 Dec	**Vic Hearne VK3CQP***
102	24 Dec	**Keith Turk VK2PKT***
104	24 Dec	**Dennis Middleton VK2NAN***

YL ACTIVITIES LIST

A list of YL nets and activities has been compiled by Ash Nallawalla ZL4LM/VK3CIT. Ash is the OM of Lesley VK3PZA. To my knowledge this is the first time anyone has attempted such a list, and we would like to thank Ash for his most detailed and comprehensive effort.

Obviously there are bound to be additions and alterations to any such list, and Ash would appreciate information of any changes since the list was formulated.

MHz	UTC	DAY	DETAILS	REMARKS
3.535	****	*Mon*	**ZL WARO CW net ZL2AGS 4th Mon**	2000 local
3.560	1830	*Fri*	**BYLARA CW net**	
3 580	1030	*Mon*	**ALARA net**	1000UTC Summer
	1030	*Fri*	**YL net**	
3.588	****	***	**YL activity on the hour**	6th of month
	0730	*Fri*	**ZL YL Gathering Frequency**	ZL1MY
3.670	1530	*Tue*	**MINOW net**	+ 1 hour in Winter
3.690	1815	*Mon*	**BYLARA SSB net**	
3.700	0800	*Mon*	**ZL WARO National net**	
	2000	*We-*	**DL-YL net**	0630?
	0700	*Sat*	**Euro YL net**	Weekdays only?
	0700	*We-*	**Euro-YL net**	Sat only?
3.710	1500	*Dly*	**Dutch YL net**	
3.770	2000	*Sat*	**Ontario Trilliums net (VE)**	+1 hour Winter
3.775	0300	*Thu*	**Dagwood net (VE)**	
	0300	*Mon*	**Wild Rose net (VE)**	
	0130	*Tue*	**CLARA net (VE)**	4th Tue
3.910	1230	*We-*	**Yankee Lassies net**	
	1400	*Sat*	**Hawk Roost net**	
3.913	1500	*Fri*	**MINOW net**	+ 1 hour in Winter
3.922	1400	*Mon*	**UPYL net**	
3.926	0100	*Thu*	**YLISSB System net**	
3.933	1400	*Tue*	**Floridoras net**	
	0400	*Fri*	**Working Girls net**	
3.940	1400	*Thu*	**TYLRUN net**	
3.943	0200	*Dly*	**County Hunters' net**	
3.945	1400	*Fri*	**SAYLARC net**	
3.950	1300	*Thu*	**TASYL net**	+1 hour in Winter
	1400	*Mon*	**Buckeye Belles net**	
3 955	1700	*We-*	**Gaylark net**	
3.973	0100	*Tue*	**Buckeye Belles net**	
3.980	1400	*Mon*	**W1SYL net**	
3.990	1430	*Sun*	**Western Pennies net**	1st Sunday
7.038	0300	*We-*	**YL CW net**	
7.060	1200	*Mon*	**South Africa YL net**	
	0545	*Tue*	**YL net**	
7.088	****	***	**YL Activity on the hour**	6th of month
7.130	0230	*We-*	**LARK net**	
7.235	1700	*Tue*	**Ironing Board net**	
7.240	1400	*Sat*	**SAYLARC net**	+1 hour in Winter
7.260	1300	*Mon*	**Shirts and Skirts net**	+1 hour in Winter
	1300	*Fri*	**TASYL net**	1st Friday
7.261	1700	*Dly*	**SPARCYL net**	
7.270	1400	*Fri*	**Midwest YL net**	
7.275	0030	*Tue*	**YL ISSB System net**	
	0030	*We-*	**YL ISSB System net**	
	0030	*Fri*	**YL ISSB System net**	
	0030	*Sun*	**YL ISSB System net**	
7.288	1500	*Tue*	**Coffee Cup net**	
14.050	****	***	**YL CW Activity on the hour**	15th of month
	0300	*Mon*	**YL CW net**	
	0300	*Fri*	**YL CW net**	
	0300	*We-*	**YL CW net**	
14.120	0200	*Tue*	**CLARA After Dark net**	1, 3, 5th Tue
	0030	*Sun*	**CLARA Sunday net**	
14.160	0800	*Mon*	**VK Natter net**	
	1900	*Tue*	**CLARA 20m net**	
	0500	*Thu*	**YL Group net**	
	0800	*Thu*	**VK Natter net**	
	0500	*Fri*	**VE/VK/ZL YL CW net**	
14.188	1400	*Mon*	**Indian YL net**	
14.200	0630	*Mon*	**DX-YL net**	
14.220	0630	*Mon*	**YL-only net**	OMs 1st Monday
14.250	1900	*We-*	**PY-BRYLA net**	
14.280	****	***	**YL Activity on the hour**	6th of month
14.288	****	***	**YL Activity on the hour**	6th of month
	1900	*We-*	**YL Open House net**	YLRL
14.295	1800	*Tue*	**QCWW net**	
	1800	*Thu*	**Tangle net**	YLRL
14 332	0900	*Tue*	**Open House YL DX net VK6YL**	1000UTC Summer
	0900	*Thu*	**Open House YL DX net VK6YL**	1000UTC Summer
14.333	1600	*Dly*	**YL-ISSB net**	
	0920	*Tue*	**YL ISSB System net**	
	0300	*Sat*	**YL ISSB net (VK/ZL portion)**	
14.336	1600	*Dly*	**YL County Hunters net**	
21.050	****	***	**YL CW Activity on the hour**	15th of month
21.183	0400	*Fri*	**VE/VK YL net VK6NYL**	
21.188	****	***	**YL Activity on the hour**	6th of month
	0400	*Fri*	**YL net**	
21.355	1430	*Dly*	**YL DX net**	
21.373	1500	*Thu*	**YL ISSB System net**	
21.375	1500	*Tue*	**YL 21 net**	
21.380	****	***	**YL Activity on the hour**	6th of month
21.388	****	***	**YL Activity on the hour**	6th of month
	1500	*We-*	**US-German YL Activity**	
28.050	****	***	**YL CW Activity on the hour**	15th of month
28.133	2300	*Fri*	**YL CW Activity**	4th Friday only
28.450	2300	***	**YL CW Activity on the hour**	15th of month
	2300	*Fri*	**YL CW Activity**	4th Friday only
	2300	*Fri*	**VE/VK/ZL YL phone net**	
28.470	0430	*We-*	**Midweek YL net VK2KDX**	
28.488	1900	*Sun*	**CLARA 10m net**	
28.588	****	***	**YL Activity on the hour**	6th of month
28.650	1345	*Mon*	**PJYL net**	
28.673	1500	*Sun*	**YL ISSB System net**	+1 hour in Winter
28.688	****	***	**YL Activity on the hour**	6th of month
	1400	*Sun*	**BYLARA DX net**	
28.805	1400	*We-*	**US-German YL Activity**	

YL CONTESTS

YLRL DX-YL to North American YL Contest — the CW section is held from 1800UTC on 9th April to 1800UTC on 10th April. Phone section is held from 1800UTC on 16th April to 1800UTC on 17th April. Logs should be sent to Mary NM7N.

NZ WARO Thelma Souper Memorial Contest 1986 — held from 0700-1000UTC each evening on 5-6th April. Logs to be sent to Vicki ZL1OC.

NEW MEMBERS

Welcome to new members —

Lee ZS1YL, who joined on 27th January 1986 and was sponsored by Bev VK6DE.

Marion WA7TLL, who joined on 29th January 1986, and sponsored by Josie VK4VAN.

Mary KE5UO, who joined on 10th February 1986, sponsored by Jill VK4ASK.

CALL SIGN CHANGES

Paula DJ0EK is now PA0ULA and Alma VK3PIP is now VK3BAO. Congratulations on the upgrade, Alma.

Until next month, 73/33 — Joy VK2EBX.

BEACONS

The present Australian 10 metre beacon sub-band contains six frequencies (inclusive) from 28.260 to 28.270MHz, as part of a world-wide network. To date five systems have been developed. These are: *Townsville VK4RTL 270; Sydney VK2RSY 262; Adelaide VK5WI 260; Albany VK6RTW 266 and Perth VK6RWA 264.* The sixth allocation, 268, has remained unused.

During February, the Darwin Amateur Radio Club Inc indicated their willingness to establish a 10 metre beacon. The request is currently being evaluated in the light of possible changes to the 10 metre beacon concept.

As previously reported in Amateur Radio, February issue, an agenda item discussed at the recent Region 3 Conference in New Zealand, proposed a change in frequencies and operation techniques for the world-wide chain of 10 metre beacons. The proposal is to replace the present, one service per channel, with the time sharing by many systems of a single frequency similar to the 20 metre beacons on 14.100MHz. These proposals will be discussed at the Federal Convention which will be held in Melbourne at the end of April.

In another beacon area, interest is increasing in the development of systems in the microwave region. To date, VK6RUF on 10.300MHz has been licensed in Perth. Notification has been received that it is proposed to develop both of the 10 and 24GHz units for VK2RSY, Dural. Information from operators of these regions would be most useful to provide guidance to both beacon constructors and band planners on matters like frequencies, antenna types (omni or directional) and polarisation, and the type of modulation. Your written comments via the Federal or VK2 postal addresses would be appreciated. The microwave bands are 2300- 2450; 3300-3500 and 5650-5850MHz; 10.000-10.500GHz and 24.050-24.250GHz. New Zealand currently operates two beacons on 10.275 and one on 24.100GHz.

There is a matter of concern to some repeater groups, particularly in Sydney, re the paging network which has developed in the spectrum from 148-150MHz. The repeater inputs for systems in the 147 segment have their inputs at the top end. Various levels of interference occurs to some repeaters. The matter is under investigation in New South Wales. A report will appear in a future issue of Amateur Radio.

Contributed by Tim Mills VK2ZTM
FTAC Beacon Co-ordinator

Spotlight on SWLing

Robin Harwood VK7RH
5 Helen Street, Launceston, Tas. 7250

Another domestic shortwave broadcasting service commenced on the 20th February 1986. It is in the ABC Northern Territory Service, with three transmitters which are located at Alice Springs, Tennant Creek and Katherine. Each sender is designed to cover about 450 square-miles, designed to overcome the gaps in coverage within the vast expanse of the Northern Territory, with a vertically polarised tropospheric-scatter array.

NOT A 24-HOUR SERVICE

Programming will mainly come from the MW Service, plus specific programming for the Aboriginal community. At present, only the Alice Springs transmitter is operational. To take account of propagational variations, the senders will drop down to a lower frequency during the hours of darkness.

The present schedule is as follows:

VL8A Alice Springs	*4.835/2.310MHz*
VL8T Tennant Creek	*4.910/2.325MHz*
VL8K Katherine	*5.025/2.485MHz*

Contrary to what has previously been published elsewhere, the Service will not be a full 24-hour service, as the MW Service is at present. Because of budgetary restraints, the service will close down at mid-night Central Standard Time.

LIMITED EXTERNAL SERVICE

Yet another nation is reportedly embarking into external broadcasting — Zimbabwe has notified the IFRB that it intends to commence broadcasts to the Far East, Africa, Europe and the Americas shortly. When the country was known as Rhodesia, there was limited external service to relay their viewpoint at the height of the blockade against Rhodesia in the 60s and 70s.

United Nations Radio, in New York, has gone silent recently. This is due to the increase in rental of the VOA transmitters. I believe that programming from UN Radio continues, with tapes being sent to other broadcasters to include in their programming.

SIGNAL STRENGTH GOOD

Recently I came across a new country on shortwave. It is Syria and although it has been operational for a number of years, it happened to be the first occasion I have heard it in English. It is very easily heard as it is on a non-standard allocation of 7.455MHz from 2100UTC, in English, with very good signal strength.

Another Middle Eastern country coming in well is Iraq. Baghdad is very clear on 13.700MHz and transmits, naturally, in Arabic. It is also on 9.610 and 9.745MHz in parallel. The best time to listen is around 0500UTC. The country is still engaged in a prolonged conflict with Iran and its programming reflects this fact, with frequent battle-sounds interspersed in the music and announcements.

LINGUA FRANCA

I do find it somewhat difficult identifying Arabic speaking stations. As it is the lingua franca for the region, naturally the majority of programming reflects this. Some do have English, or French broadcasts, yet their diction is often extremely difficult to comprehend. This is readily understandable, as the use of English or French is not as widespread, as with other regional areas. Also some nations are trying to reduce western ideas and practices, particularly where there is a strong Islamic fundamentalist support. Hence, there is a strong incentive to concentrate on Arabic or other regional dialects.

DIFFICULT TO LEARN

Arabic is a particularly difficult and complex language to learn, but fortunately there are some identification aids available to assist the DXer. There have been language identification tapes made for HAP-USA, by Radio Netherlands, and some DXers. These contain identification announcements in various languages and dialects.

Many international and domestic services employ Interval Signals or signature tunes, to readily identify the station or program. Our own Radio Australia is easily recognisable by *Waltzing Matilda* which is played on a synthesiser. Other broadcasters also have different Interval Signalss for specific broadcasts/programs. For example, the BBC World Service is well- known for the sounds of *Bow Bells* which are familiar to any Cockney. For their European Services a synthesiser plays **V . . . —**. This was used in WWII on broadcasts to occupied Europe, when it was played on a kettle-drum. For other services, the synthesiser plays the notes BBC.

OTHER IDENTIFICATIONS

Most should be readily familiar by now with Radio Moscow's Interval Signals as well as other Soviet stations. Yet some interval signals have a similar sound; eg all Indian Radio and Radio Pakistan. I often still get caught because of the almost identical Interval Signals. It does take practice to tell the difference. I believe the Radio Bangladesh also had similar Interval Signals to the above, but I think they have since altered it. Others, such as Radio Beijing, have a separate Interval Signals at the beginning and the conclusion of their scheduled transmissions.

HELPFUL EDITION

An indispensable aid to the DXer or SWL is the World Radio TV Handbook. The 40th Anniversary Edition was recently published. The cost has increased to around $A38, although some who ordered through bulk ordering were able to reduce this a little. This 609 page book has all the regular features, listed by country, with stations, broadcasting organisations, and transmitter sites included. There is also an article tracing the history of the WRTH from 1946 right up to the present day.

There have been improvements in layout, making it a little easier to rapidly find the country or region. A valid criticism has been that by the time it has been published, some of the information is obsolete. This is unavoidable, as the virtual explosion of stations and broadcasters in the past 15 years has made it difficult to compile an accurate schedule, right up to the deadline. Fortunately, the WRTH publishes supplements coinciding with the seasonal frequency alterations in March, May and September.

For further information about the book write to PO Box 88, DK-2650, Hvidovre, Denmark.

Until next time, the very best of listening and 73, Robin VK7RH.

AR

Eric Trebilcock L30042, joined the South Australian Division of the WIA in April 1930. Eric was admitted as "Associate Member No 5". He transferred to the Victorian Division in 1949.

When Eric joined the WIA R B Caldwell was SA President, D R Whitburn was SA Secretary. Federally, H K Love was President and Bruce Hardie was Secretary.

Eric, and his late wife Gene, conducted the VK3 Inwards QSL Bureau for many years and Eric was granted Life Membership of the WIA in recognition of his services to the Institute.

Eric, and his bride Aline, have just returned to Victoria after an absence of five months and one can be assured Eric will be "tuning around the CW bands".

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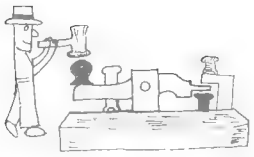

Pounding Brass

Marshall Emm VK5FN
Box 389, Adelaide, SA. 5001

It was a pleasant surprise to see the wealth of CW-related material in the January issue of *Amateur Radio*. Although, on second thought, the news that the International Maritime Organisation (IMO) plans to phase Morse out in favour of digital communication systems rings a few alarm bells. There are parallels with amateur radio, insofar as those with the dollars will undoubtedly benefit by having *easier* means of communication, while those who cannot afford the state-of- the-art equipment will, inevitably, suffer from degraded service; those who understand radio and the capabilities of CW will be scorned by the button-pushers.

The move appears, at first sight, to make sense — but it begs a lot of faith in some fairly advanced technology. We all know the risks that go with anything that is automatic, or operates at the touch of a button. I just spent two nights stripping-down an *automatic* washing machine, which had a broken gear. At least it was capable of being fixed, assuming I can obtain the replacement gear from Sydney.

Most of us who have sailed the high seas at one time or another would, I suspect, feel a lot safer if there is a competent Morse operator on board, with suitable (if simple and inexpensive) equipment.

It is interesting to note, however, that the IMO has sense enough not to impose Cinderella technology by programming maritime computers to communicate in Morse code! (unlike some amateurs, I know).

If I can be pardoned for changing course by a few degrees, *What's Your Problem?* in an Adelaide morning newspaper are still dispensing wisdom (remember the two-prong to three-prong voltage adapter?). This time a reader asked about the last use of Morse telegraphy in South Australia and Australia. The South Australian part may have been right — Kalangadoo to Adelaide on Saturday, 3rd March 1962, but I don't think the "last Morse code message in Australia was between Roeburne to Onslow and Wittenoon Gorge, Western Australia, in November 1968". According to Jim Linton VK3PC, December AR, the last Morse telegraphy link in Australia, to Lord Howe Island, did not close until 1975. I wonder what the last message was . . .

One would suspect that the Lord Howe Island link was by automatic-machine Morse, and perhaps the WA link was, as well. Any further information on the last **manual** telegraphy links would be appreciated (quoting sources, if possible).

The January edition of this column described semi-automatic mechanical keys in some detail, but did not say much about fully automatic (dot and dash) devices. I apologise for the oversight — I had intended to say that they were never very popular because they were extremely complicated mechanically, expensive and usually could only be used at one speed. In fact, I have never seen one, but my friend, Tom Laidler VK5TL, rang to give me some more information on a locally produced model and invited me to have a look at it. He agreed with the reasons I put forward for their general lack of popularity, but pointed out that there was always a small market for them.

Tom says a fellow by the name of Norman Thomas developed one in Adelaide in the 1920s. The parts were made by Hitchcox Brothers, and Mr Thomas personally set-up and adjusted each one before shipment. He sold them all over Australia, at a price of 50 pounds ($100 in decimal currency). They were fixed at one speed, around 20WPM I think Tom said. (Do any other VK amateurs possess one of these units. Ed).

Tom began his career in PMG telegraphy, in 1918, which gives him a wealth of experience to speak from.

To conclude the column this month, I would like to share with you some fascinating information my eight-year-old daughter showed me in the 1985 edition of the *Worldbook Encyclopedia.* It is their definitive article on Morse code . . .

"Morse code is a system of dots, dashes, and spaces that telegraphers in the United States and Canada once used to send messages by wire. The code was named for Samuel Morse, who patented the telegraph in 1840. The letters that occur most frequently in our language are represented by the simplest symbols.

"The dot is made by quickly pressing and releasing the key of the telegraph sender. This produces a rapid 'click-clack' sound in the receiver at the other end. A short dash is twice as long as a dot. A long dash is equal to four dots. The space between the dots and dashes that make up a letter is the same length as a dot. The space between the letters of a word equals three dots. A space that is part of a letter combination equals two dots.

"For years, all telegraph messages and most news were transmitted by Morse code. Now, most such messages are sent by automatic facsimile and printing telegraph machines. Radio and telegraph operation in other countries once used International Morse Code, also called International and Continental Code. But facsimile and printing methods of sending messages are now more widely used".

73 and "click-clack" until next month.

COMPREHENSIVE ENGLISH BROADCAST GUIDE

This month's issue of Electronics Today carries a comprehensive guide to the English language programmes from shortwave broadcasters in nearly 40 countries. The guide provides times and frequencies for an astonishing range of entertainment, news and information programmes.

ALSO IN APRIL ETI

- ★ Car audio — the state-of-the-art in in-car entertainment.
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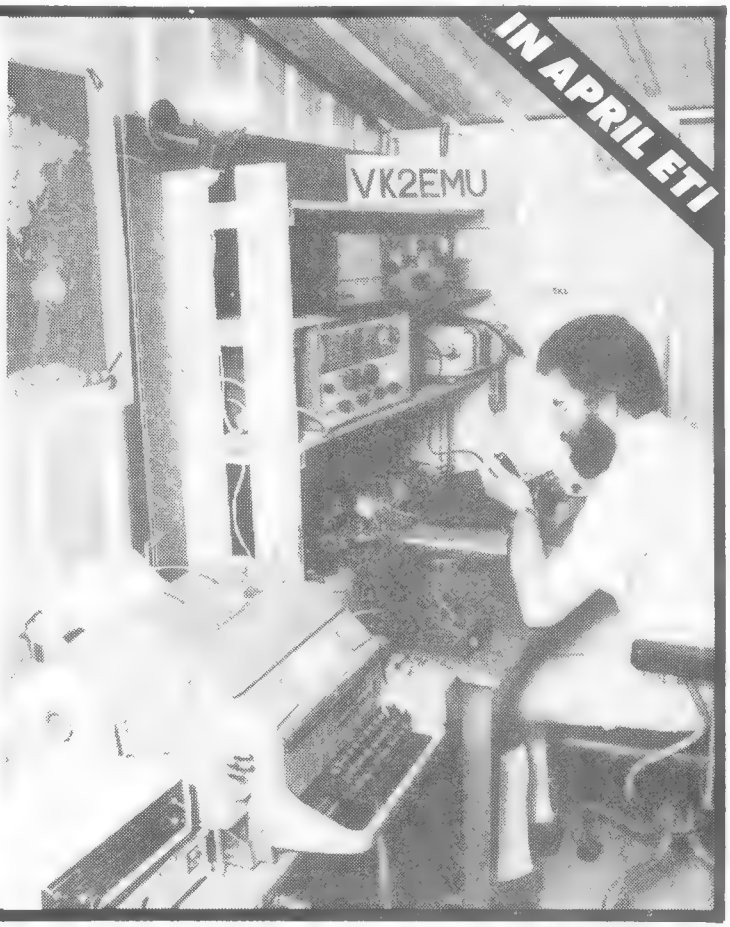
- ★ Amstrad 128K reviewed.
- ★ EPROM Emulator and programmer reviewed.



Radio Amateur Old Timers Club

HUNTER BRANCH DINNER 1960

The accompanying photograph was taken at the Hunter Branch Dinner in October 1960. The photograph features, from left: Dave Duff VK2EO, Federal Councillor VK2 Division; Gordon Sutherland, Branch Secretary; Lionel Swain VK2CS, Branch President; Wal Salmon VK2SA, Metropolitan Police Supervisor; Bill Lewis VK2YB, WIA President; George Riley, NSW Superintendent of Radio with the Postmaster General's Department; Max Hull VK3ZS, WIA Federal President; Allan Fairhall VK2KB.

Photograph courtesy Newcastle Herald & Sun Picture Service

CHANGE OF RAOTC NET CO-ORDINATOR

Lay Cranch VK3CF, has spent seven years as co-ordinator of the RAOTC broadcast net. Due to indifferent health, Lay has resigned from his position which will be taken over by Mac McConnell VK3RV, as of the April Official Broadcast.

The success and popularity of the net operation has been due to Lay's dedication and we say a big thank you to him for his devotion to the task. He continues to be interested in the work of the RAOTC by taking over the less onerous task of VK3 Liaison Officer.

DONATIONS

In order to continue with the publication of the RAOTC journal, *OTN,* it has been necessary to obtain some finance by donations from members. Thanks are extended to those who have made donations — some on more than one occasion. A list of donors will be published in these columns in a future issue of Amateur Radio magazine.

HEADQUARTERS ANNUAL DINNER

The annual dinner of the RAOTC was held on 6th March 1986, at the City and Overseas Club, 291 Dandenong Road, Windsor. The evening commenced with pre-dinner drinks at 6.30pm, moving on to dinner at 7pm.

At the Victorian luncheon in September 1985, members were entertained by Chris Long, retired Assistant Electronics Curator of the Melbourne Museum, who gave an exciting screening, with sound tracks, of slides of the early history of RF transmissions and sound reproduction.

Chris was prevailed on to present another, different show, for the dinner.

RAOTC SECRETARY RESIGNS

It is with sincere regret we advise the retirement of Harry Cliff VK3HC, from the office of Secretary/ Treasurer of the RAOTC of Australia. Indifferent health in recent months has precipitated Harry's decision.

As the inaugural Secretary and Treasurer of the Club, Harry has devoted a decade of time and energy to the Club, ably assisted by his wife Melda. Out thanks are extended to them both with the fervent wish that they be spared to enjoy many years of the bracing air at Point Lonsdale, from where so much of the official office work has emanated for the past 10 years.

Harold Hepburn VK3AFQ, has kindly taken over from Harry and we welcome him to office. Please take note that all future correspondence should be addressed to Harold at 4 Elizabeth Street, East Brighton, Vic. 3187.

RAOTC TENTH BIRTHDAY

1985 celebrated the first ten years since the inauguration of the RAOTC, in 1975. Over this time, our membership has grown from under one hundred members, to over 800. Our formation was the brain-child of Bob Cunningham VK3ML *"to maintain interest and fellowship amongst amateurs who had held a license for 25 years or more".*

Our steadily increasing membership, despite the inevitable Silent Keys, indicates there is a place in the scheme of things for such an organisation of Old Timers.

The RAOTC publication *OTN,* is issued annually to keep alive the stories, artifacts and amateur activities of those many decades when amateur radio was very much a 'do-it-yourself' hobby.

HOW TO JOIN THE RAOTC

Eligibility for membership is available to amateurs who have held, or been qualified to hold an amateur radio licence for a period of 25 years, or more.

Its objectives are to maintain interest and fellowship among the older licensed amateurs. It is affiliated with the Wireless Institute of Australia.

The joining fee is $15 for Australian amateurs, or $20 for overseas applicants, which should be submitted to the Secretary, Harold Hepburn VK3AFQ, 4 Elizabeth Street, East Brighton, Vic. 3187, together with the following information;

Date of original licence, Operator's Certificate number, Original Call Sign or qualification held, Present Call Sign if original not now held.

An application form is available from the Secretary at the above address. It is required to be signed by a proposer and a seconder who are already RAOTC members.

Membership is only paid once! It entitles members to participate in all RAOTC on-air nets, social functions and a copy of the journal *OTN.* Members also receive a Club badge as part of the 'once only' fee. Donations may be called for occasionally to cover operating costs.

RAOTC QSO PARTIES

Two QSO Parties are held each year for members of the RAOTC and the Old Timers' Club of New Zealand.

Eligibility: The Parties, in the form of contests, are open to members of the RAOTC and the OTC New Zealand. Please note that there are members of the Australian Club in overseas countries, particularly the USA, who could possibly participate at the times laid down.

Contest Exchange: Members will exchange their Club membership number — VKs prefixed by **A** and ZLs prefixed by **Z;** Year of first license; Name; Age' *eg Nr A256 1961 Bill 49 — Nr Z128 1923 Harry 78.*

Scoring: One completed contact with a member on CW or SSB (but not both), will score five points.

Multiplier: The total of VK/ZL and overseas call areas contacted will be used as multipliers.

Final Score: Contact points times multiplier.

Dates, Times and Bands: The first event is held on the second Monday in March from 0200 to 0500UTC on 20 metres. Centre frequencies — CW 14.050 and SSB 14.150MHz.

The winter party has previously been held on 40 metres, but after poor conditions during 1985, the ZLs have suggested operation on 80 metres for a trial period during 1986. To obtain an opinion as to which works best, there will be two events in succeeding weeks.

The second event is held on the second Monday in August from 0800 to 1100UTC on 40 metres. Centre frequencies — CW 7.035 and SSB 7.100MHz.

The third event will be held on the third Monday in August from 0800 to 1100UTC on 80 metres. Centre frequencies — CW 3.520 and SSB 3.650MHz will be used.

Dates for the 1986 events are 10th March and 4th and 11th August.

Entries: Will show claimed scores indicating mode (CW, SSB or CW/SSB), number of QSOs and multipliers, preferably with a list of calls. This information should be forwarded to John Tutton VK3ZC, 11 Cooloongatta Road, Camberwell, Vic. 3124, as soon as possible after the first and third events.

A suggestion has been forwarded by the ZLs that the 'Exchange' be altered from the present numbering format, as above (A256 1951 Bill 49), to Nr. A256 Bill 5149, ie the final four-figure group being a combination of the year of the first license, 1951, and age, 49.

Would you please give an opinion on this suggestion and forward it with your log for the March Party.

AH

BEACON HELP WANTED

It is intended to increase the VK2RSY network of beacons. The next frequencies to be introduced are the 10 and 24GHz bands. Opinions from those who work in this region would be most welcome as to suitable frequencies and polarisations. Please write to the VK2 Division of the WIA, Box 1066, Parramatta, NSW. 2150.

VHF COMMUNICATIONS

VHF Communications Magazine will continue in 1986.
Subscriptions will be as follows:

Air Mail $17.00
Surface Mail..... $12.00

Club Corner

PACKET RADIO AT THE BENDIGO CONVENTION

The Melbourne Packet Radio Group attended the Bendigo Convention on 16th February 1986, and set up a demonstration station. They were able to link into the Melbourne area via a digital repeater that was set-up on Mount Macedon for the day. Links were made to the AM-NET BBS System and Earl VK3BER in Frankston.

Peter VK3AVE.

Attending Bendigo were: Richard VK3KCQ, Peter VK3AVE, Ian VK3KRI and David VK3YDF. John VK3ZVR and Mike VK3YBM, were the Mount Macedon link whilst Earl VK3BER and Peter VK3AZQ provided the Melbourne link.

The whole exercise was a resounding success as was anticipated. A few minor problems occurred such as when a plug was knocked out of the wall in St Albans, and the antenna at Bendigo fell onto the roof.

During the day, Jim Linton VK3PC, at the Convention in Bendigo, and Earl Russell VK3BER, were heard chatting through the repeater.

Much interest was generated amongst the people viewing the demonstration at Bendigo. Visitors to the Convention attended from Ballarat, Shepparton and Albury districts and it is hoped that Packet Radio operations will begin in these areas in the near future.

The Melbourne Packet Radio Group formed into a club in January 1986, as sufficient members became available, and during the year the club will be attending many coming events similar to the Bendigo Convention.

The club's digital repeater is now permanently located at Broadmeadows, and covers the greater part of Melbourne and is workable as-far-afield as Geelong and St Leonards. Reception reports of the repeater, heard on 147.600MHz at 15 minute intervals using 1200 Baud data transmissions, would be most welcome.

For further information about the club write to Melbourne Packet Radio Group, Box 299, St Albans, Vic. 3021.

Contributed by Richard Donaldson VK3KCQ

AR

SYDNEY AMATEUR DIGITAL COMMUNICATIONS GROUP

The Vancouver Amateur Digital Communications Group has recently announced the availability of the new revised VADCGG Mk2 Terminal Node Controller for use in amateur packet radio communications. This TNC is based on the original VADCG TNC, produced in 1979 and includes some of the standard features such as 8085 CPU, 8273 HDLC, and 8250 UART. It has remained at the same physical size to allow retrofit of existing Mk1 units.

Some of the new features are 64 kBytes of 2764/6264 ROM/RAM configurations, allowing optional downline loading of TNC software, provision of battery back-up of CMOS RAM, which enables storage of user dependant terminal control parameters. The terminal also provides circuitry for on-board switch mode power supply, enabling operation from a 12V supply.

There is provision for use of a 8255 PIA for hardware function setting and can act as a second terminal port, along with the standard DB25 connectors providing RS232/V.24 signalling to both terminal and modem ports.

The Mk2 TNC board and documentation can be ordered from the VADCG, 9531 Odlin Road, Richmond, BC. Canada, V6X 1E1, for Can$50, plus Can$5 postage and handling, the Intel 8273 HDLC chip can also be obtained from them for Can$50, plus Can$5 postage.

The Sydney Amateur Digital Communications Group will provide the software support for the VADCG Mk2 TNC, including the SADCG Master/Monitor software which provides a menu driven system for both Vancouver V2 and AX25 protocols in 2764 EPROMs.

In conjunction with the Mk2 unit, the SADCG provides a 7910 radio modem PCB which uses the AMD7910 world modem chip providing various Bell and CCITT AFSK modem frequencies and interfaces to the TNC via a DB25 connector. The PCB and documentation is available for $20 plus $2 postage from SADCG, PO Box 231, French's Forest, NSW. 2086.

Total construction cost for the TNC is approximately $250 and the modem is approximately $100.

Both VADCG and SADCG are non-profit, volunteer organisations involved in promoting development of amateur packet radio systems throughout the world.

AR

MARAC

The Marine Amateur Radio Club was formed in June 1985, to join past and present members of the Royal Netherlands Navy who are active amateurs, or are interested in radio. In less than six months MARAC grew from 40 to 120 members. A special Award has been instituted and copies of the rules may by obtained from John Aarsse VK4QA (MARAC 44), PO Box 211, Nambour, Qld. 4560 (SASE please).

Former members of the Royal Dutch Navy, civilian or military, are encouraged to join. MARAC is an associate member of the RNARS and will use, for the present time, 14.190MHz, the RNARS calling frequency, as a DX calling frequency. For further information write to: The Secretary MARAC, G7CW7CN van der Voort PA3DKZ, Burgemeester Warnerslaan 5, 1761GE, Anna Paulowna, Netherlands, or contact John VK4QA.

MARAC also publishes a quarterly journal, which is truly international, as articles are printed in Dutch, English and German.

Contributed by John Aarsse VK4QA

AR

SIERRA DELTA ALPHA RADIO CLUB

The Sierra Delta Alpha Radio Club has been formed. Membership is open to all members of the Seventh Day Adventist Church who have a licenced call sign.

The objectives of the Club are to provide opportunity for Christian witness; radio contact fellowship; better on-air procedure and monitoring in cases of emergency, etc.

Whilst the Club President, retired pastor Bill Turner, is mobile around Australia inquiries should be directed to: *Les Green, Secretary SDA Radio Club, Unit 36, Adventist Retirement Village, Victoria Point, Qld. 4163. Telephone (07) 207 8395.*

AR

NORTH WESTERN BRANCH

Meetings are held on the second Tuesday of each month at the Penguin High School, beginning at 7.30pm. Activity and club station nights are held every second Friday, same location, 8.00pm. Visitors are always welcome. Club call sign is VK7NW and postal address is Box 194, Penguin, Tas. 7316.

Interests within the Branch include HF operation; ATV; Special Communications; Antennas and Computing.

Further information may be attained from the President VK7KAB, the Secretary VK7AH, or VK7s WP, KDR, MB.

AR

DEVIL NEWS from the NORTH WEST

The last meeting of the Branch got off to a very good start with 24 people in attendance and two visitors.

Camp Quality (see last column), will be held from 8-14th December and discussions of the requirements needed for communications have been discussed. Communications will be from Penguin to Ulverstone and Kimberley to Ulverstone, with a station on air at the camp during the week. Assistance will also be required to provide a video of the days activities for resting children to view. The local Apex club is also taking part in the video venture.

Club members assisted with communications for the Boys Brigade Billycart Derby, held on 22nd March. VK7s WJ; ZPT; ZBT and ZHA donated their time to this cause. Assistance was also provided for the Horse Club Trials during last month.

Andrew VK7ZAP, has been constructing two diplexer units and the Branch was asked to consider an extension of the allowance to build another five filters for installation at a special communications repeater on Mount Duncan, and also the Lonah repeater. The money was made available for Andrew to conclude his good work.

About 83 QSL cards were received for the month and 30 were dispatched.

Visitors to Tasmania are advised if they put-out a call on Repeater 3 and do not receive an answer do not despair. During the day not many people are around as most operators work, but don't stop trying — we would like to talk to you.

Broadcast Officer Frank VK7FH, has advised that Broadcast Rosters are being produced, whilst the Fund Raising Committee has got off to a very sluggish start but the ideas are there for bigger and better things to come during the coming year.

A R Showcase

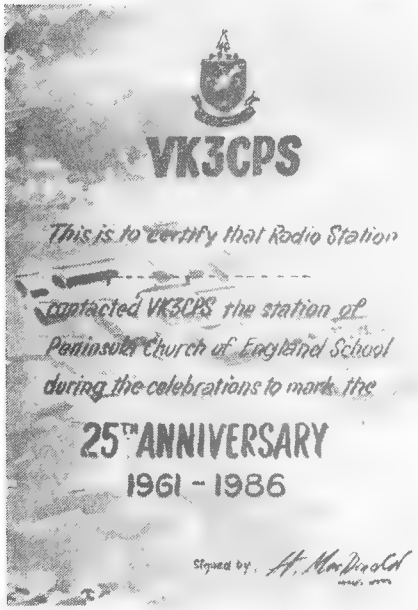
Ideas were put forward by the President, of ways to promote the Branch and amateur radio to schools and the public in the hope of stimulating new interests in radio.

The Clanger Award for this month, was presented to Jack VK7WJ.

The evening concluded with a video of a power station on the mainland which was filmed by Jack VK7WJ, during his holidays in 1985.

Contributed by Max Hardstaff VK7KY

AR



PENINSULA SCHOOL AMATEUR RADIO GROUP

To celebrate the 25th anniversary of the founding of the Peninsula Church of England School, the Peninsula School Amateur Radio Group, VK3CPS, intends to activate the school radio station throughout the 19th April 1986. All stations who work VK3CPS will receive, without cost, a special certificate to mark the event. The certificate is high quality, in two-colours and measures 160mm by 200mm.

Contributed by Steve Curtis VK3CAX

AR

DIGITAL ANTENNA SYSTEM

Reliable antenna matching for frequencies between 3.5 and 30MHz can be achieved using the new Icom AH-2 digitally controlled antenna tuning unit. The unit has been designed for mobile applications where broad band antenna matching has traditionally been a problem. It consists of a control unit that resides beside the radio and a tuning unit that mounts close to the whip antenna supplied.

The operator selects the desired frequency and pushes the TUNE button on the control unit. An on-board CPU selects the most favourable LC combination for the given length of whip antenna and the frequency. Worst case tuning time is 20 seconds, but typically the time is about four-to-five seconds. Maximum input power is 120 watts. Unlike normal tuners that require full output power during the tune-up period, the AH-2 derives the frequency information direct from the transceiver during use. Just 300mW of power is used for a very short time to check the tune L/C mix selected by the CPU. An in-built memory system allows up to eight pre-selected frequencies to be stored which allows a tune-up time of one second, or less, on these frequencies.

The tuning unit assembly is constructed in a tightly sealed plastic case to provide a dust and water-proof environment. Mobile antenna mounting is made extremely easy by the use of a clever bracket which utilises the the towing-hook located below most vehicles.

Icom (Australia) Pty Ltd, situated at 7 Duke Street, Windsor, Vic. 3181, ph (03) 51 2284, will provide further data upon inquiry.

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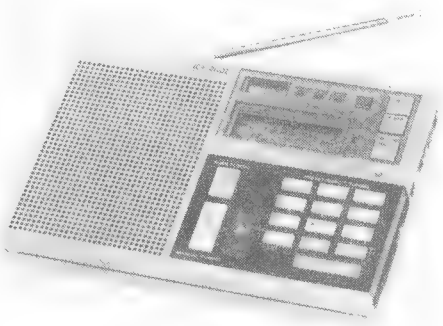

GLOBAL RADIO BROADCASTS TO THE WORLD IN STEREO

H D Norman, a 34-year-old Alabama native from the city of Opelika, is launching a new world-wide HF stereo radio station which he hopes will capture listeners from Australia to Zaire, and all countries in between.

NDXE Global Radio (pronounced *In Dixie*) has been several years in the making. Norman, who began as a radio station record librarian 28 years ago, conceived the idea with the late John Herbert Orr, who produced the first US manufactured magnetic recording tape and the Orrox CMX Video Editor.

As the world's first privately-owned HF stereo station, NDXE will offer programming that is totally different from the VOA, BBC, and other government-operated shortwave stations. NDXE's programs will feature live concerts, sporting events, world-wide phone-in shows, news, international weather and music by the world's popular recording artists — no political rhetoric.

Although HF transmissions have not been considered a viable medium for broadcasting "concert-hall" quality music, NDXE's super power 100kW stereo shortwave transmitter and 30m (100') rotatable log periodic antenna will deliver over three-million watts of power. Broadcasts will be beamed to the Pacific, Europe and the Americas.

NDXE will introduce a new measure of advertising, the Global Advertising Unit, which international advertisers can use to blanket the advertising message across all continents or to target a specific region. In addition they will operate a massive mail order business — listeners will be able write or call the station to order goods from jeans to refrigerators.

Norman is brimming with ideas to attract listeners and is offering bumper stickers, license plates, coffee mugs, etc. Special listener prizes will also be offered. For instance, since SWLs collect QSL cards, NDXE will offer one — a 3D holographic card!

It is anticipated NDXE will begin operation on 4th July 1986, and Norman is hopeful of attaining the services of President Reagan to throw the first switch.

Further information may be obtained by writing to NDXE Global Radio Headquarters, PO Box 569, Opelika, Al 36801, USA.

AR

SCALAR INDUSTRIES

The Scalar B20 lightweight VHF dipoles for 156-162MHz, are completely enclosed in a tapered fibreglass radome for complete protection from corrosion and precipitation static and do not require a ground plane.

The B20D is fitted with a fold-down bracket for deck installations and enables the antenna to be lowered for stowage.

The B20M is fitted with 100cm of anodised aluminium tube, and is suitable for mast mounting on board, or as a low cost shore base antenna.

The B20S is a light-weight variant suitable for single-hole mounting, whilst the B20G is a 3dB gain antenna suitable for base antenna applications.

The bandwidth is 6MHz, VSWR less than 1.5:1 and is terminated with three metres of RG58/CU.

* * *

Scalar also have a comprehensive range of professional audio connectors, plugs and sockets, including 3.5mm and DIN connectors, 2, 3, 4, 5, 6, and 8 pin microphone plugs and sockets, in-line and panel-mount plugs and sockets, power terminals and connectors, TV and radio plugs and sockets, also fuse holders.

A range of wire also available includes speaker wire, DC power cable, microphone cable and hook-up and multi-core cables in various colours.

* * *

The ARRA Microwave Training Kit, MT-1, has been designed for Military, College, Industrial and Vocational training courses in microwave theory and applications. The kit is a complete course in

itself and is intended for use by people who have little or no background in microwave theory. Its prime function is to introduce the concepts of microwave theory and propagation, and the components used in the transmission of microwave energy.

The kit comprises three electronic components, 16 waveguide components and an assortment of accessories including an easy-to- understand training manual, and operates on 8.600-9.600GHz with a 2K25 Klystron and RG67/U waveguide components, powered by 110 volts, 60 cycles AC.

For further information in reference any of these products please contact Scalar Industries Pty Ltd, 20 Shelley Avenue, Kilsyth, Vic. 3137 or phone (03) 725 9677. Branch offices are in Sydney, Brisbane and Perth.

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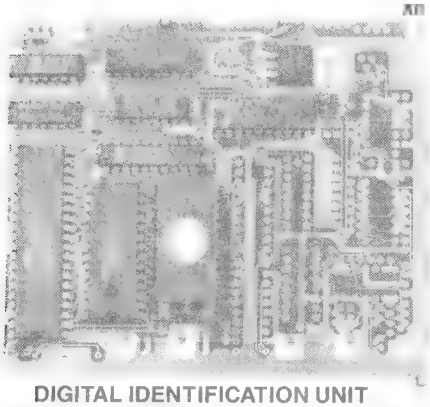

DIGITAL IDENTIFICATION UNIT

Imark Pty Ltd have released an Australian designed Digital Identification Unit suitable for installation to repeaters or transceivers. It is a digital micro-processor controlled module featuring state-of-the-art technology and includes an EPROM for ease of programming. This allows the various parameters for Time Out Time, Identification Speed and Frequency, Identification Time and Identification Tone, etc, to be tailored to suit the consumers requirements.

While this module is primarily designed to plug into the option interface on SAWTRON KG105 transceivers, it is easily fitted to other repeaters or transceivers. Furthermore, additional software features can be provided upon request.

The unit weighs only 125kg and is supplied complete with mounting hardware and installation instructions.

Further details can be obtained from Imark Pty Ltd, 167 Roden Street, West Melbourne, Vic. 3003 or phone (03) 329 5433.

AR

QSP

STOLEN EQUIPMENT

The following amateur radio equipment has been reported, by the Melbourne Office of Emtronics, as being stolen.

The equipment is one IC-735, Serial Number 36304455 and one IC-290H, Serial Number 17703342.

If you are offered one of these items, or know of their location, contact Senior Detective Ewann McDonald on (03) 329 0000.

Also missing from New South Wales and Queensland is the following equipment.

Iris Bonsey VK4NME, recently suffered a house-breaking and lost her two metre Icom IC-2A hand-held — serial number 09665. This unit has great sentimental value as it was a gift from Iris' late husband. Any information on this unit would be greatly appreciated by her.

Graham Jones VK2CCK, has lost a Kenwood TR-7850 two metre FM transceiver — serial number 1111125.

Finally, Kevin Dawson VK2CKD, has lost an Icom IC-02A two metre hand-held — serial number 29901052.

Listening Around

Joe Baker VK2BJX
Box 2121, Mildura, Vic. 3500

"So this is Christmas". I have been hearing this song quite a lot recently as I am writing these notes just prior to Christmas. I would prefer to spend Christmas somewhere other than Buronga, but unfortunately I will be staying at home.

Christmas is a time when we all reminisce of Christmases past, particularly those spent in the presence of other amateurs who are now silent keys. This Christmas, I will listen to the voice of my brother (if I can find the tape), and my good friend Michael Leane, and an interview I did with him 17 years ago when he was a patient in the Mildura Base Hospital. *Isn't it wonderful how the modern tape recorder can bring us the voices of our departed friends.*

NO TAPE RECORDER

When I was on Morotai Island, during 1945-46, portable tape recorders hadn't been invented, and even the Army Amenities Broadcast Station 9AD (1440kc and 200W) used transcriptions to provide the troops with shows that had been recorded on mainland Australia. *Dexter* was a favourite with the troops, and *Spencer, the Garbage Man* was not only a character in the Willie Fennel Show to us, but we had a live-announcer by the same name on the staff.

Radio 9AD had two studios, a console for announcers with recorded shows and a large auditorium which was capable of being used as a dance hall as it could accommodate about 200 people. The radio station was fabricated from Sisalkraft with generous openings in the sides to afford some comfort in the high humidity of the area.

WATCHING THE FILAMENTS GLOW

The main transmitter, in fact the only one, was a RAAF unit which used four 813s as finals. Whenever I was in the control room I would admire the ruddy glow which the filaments from these tubes generated.

Christmas 1945, was a jolly time at the studios of 9AD. The war had been over for several months, and everyone was waiting to depart for home.

As mentioned earlier, the recorded entertainment came as transcriptions of shows that had earlier been broadcast by commercial stations, and when they arrived they still were complete with commercials. As 9AD was an Army station, we did not want to hear advertisements for toothpaste and boot polish, so it was up to one Sergeant-Major to monitor the disc the day before it went to air and note, with a chalk-mark, where the commercials began so the on-duty announcer could lift the pick-up over them whilst they were on-air.

LISTENING TIME

As the servicemen on Morotai had other duties rather than listening to their portable battery radios, and because the record library only had 2 000 discs, the transmitting hours of 9AD were somewhat restricted. We normally awoke at 6am to start the generators, put power to the transmitter, check the turntables and wake the duty announcer. The early morning program went to-air at 6.30am, and continued until about 9am. The next session was from noon o 1pm and again from 5.30 to 10pm.

On one particular morning, I started the generators and then decided to make a cup of tea before waking the announcer. I filled the electric jug, plugged it in and as soon as I threw the switch there was a flash. Ah-ha, I thought, there is something wrong with the jug, so I decided to pass on the cuppa and check the turntables instead. They would not turn, it was evident that a fuse had blown and I didn't know where the fuse box was — and on-air time was approaching fast. I made a mad dash for the chief technician's tent. With minutes to spare, he began to rectify the situation whilst I went to wake the announcer. The session went to air on time although the announcer was dressed in his pyjamas.

A HAPPY TIME

Christmas night 1945, was a happy time with the 9AD auditorium full of service men and women, many of whom rendered songs or played musical instruments over the air for those who could not attend. Many favourite songs were requested, some being Bing Crosby's *White Christmas, When you wish upon a Star,* and the Andrew Sister's song *Don't Fence me in.*

New Year's Night is another which is difficult to forget. The duty announcer was inebriated as he had had quite a number of bottles of alcohol with him in the studio. Visitors to the small studio began to annoy him and he ordered them to leave, but they were hesitant to go. As he played more and more records, and the visitors became louder and louder, the alcohol began to take over. He eventually pushed them all out the door and began to smash each record on the floor commenting as he went *"Now we've all heard that record so often that I'm sick and tired of it, so I'll smash it"*. All these proceedings were done with the microphone open so all could hear what he was doing. Eventually he had to be physically removed from the studio by another announcer. Listeners all over the island commented later that they had never heard anything like it.

73 for now and more about Morotai later, Joe VK2BJX.

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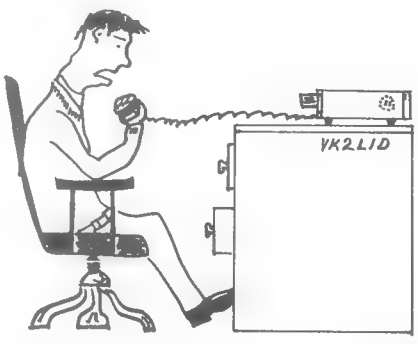
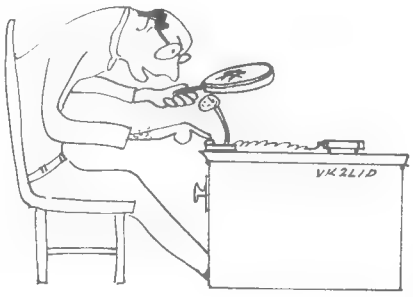


"Yes, OM — I said a horizontal vertical — We have just had a WIND-STORM!" — VK2COP



"By golly, OM — These new rigs are getting smaller all the time!" — VK2COP

VK2 Mini-Bulletin

Tim Mills VK2ZTM
VK2 MINI BULLETIN EDITOR
Box 1066, Parramatta, NSW. 2150

NEW MEMBERS

The Division would like to welcome the following New Members.

January: J Corben VK2EXT, J Dumont VK2NHH, P J Hampshire VK2NBT, A I Johnson VK2XEA, R T Lloyd-Jones VK2YEL, L A J Nickless VK2NDP, L S Porter VK2HB, J F Ranford, I S Wilkinson VK2PKB.

February: C E Aston VK2YH, P J Camilleri VK2CPJ, R J Clark VK2YOD, B J Crowe, D A Evans G3OUF/VK3FBG/2, C J Hynds VK2KLS, H Inoue VK2CEB, S Jensen, A R Oddy VK2NXK, R J Wing, P Witton VK2VPW, M F Veevers VK2BMV.

EVENTS FOR APRIL

These include the Annual General Meeting — 1400 hours on Saturday, 5th. Refer to separate posting for the details.

The Conference of Clubs Weekend will be hosted by the Orange ARC at Amateur Radio House, 109 Wigram Street, Parramatta, on the 19th-20th.

Details of these and other events will be broadcast on the VK2WI Sunday Broadcasts, 11am or 7.30pm.

BEACONS

On the evening of 17th January 1986, the VK2RSY 70cm beacon, on 432.420MHz was heard in New Caledonia. As previously reported, it is intended to increase the VK2RSY network. The next frequencies to be introduced are the 10 and 24GHz bands. Opinions from those who work in this region would be most welcome as to suitable frequencies and polarisations.

BROADCAST SURVEY

As these notes were being compiled, replies to the survey were still coming in to the Divisional Office. Thank you. A summary will appear in a later issue of these notes.

CALL BOOK

Now is the time for both clubs, groups and amateurs to upgrade any entries for the next edition of the **Call Book.** Please check your current entries and if amendments are required send them in now to the Divisional Office. If it is a change to an amateur call sign listing, send your original notification to the Department of Communications, PO Box 970, North Sydney, NSW. 2060, **and** a copy to the Division.

RD CONTEST

As noted elsewhere in this issue (in th Contest Column), a problem occurred which altered the placing first notified in the February issue of AR. The revised placing resulted in the VK2 Division being the winner for the second year running in recent times. Thank you to all who submitted their logs as well as those who advised the office during February, when the error occurred. The RD Trophy is on display at Amateur Radio House.

DIVISIONAL LIBRARY

Aub VK2AXT, reports that 1985 was another year of expansion in the library range, thanks to the many generous donations of books and magazines. There was one large donation of books which included many application data handbooks from the various solid state vendors. These were very much appreciated and should help those who build their own equipment or require alternate part replacements for that hard-to-get item.

A special thanks to the following for their donations — VK2s FDB; DGR; AYF; ZIG; CDM; YE; POT; JTD; ZSE; ADL; ZJC; AYB; DYM; CJP; ZF; CZX; PH; DYP; DF; BHW and EMC. There were also several anonymous donations.

During the year the cross reference listing was further updated and there are now in excess of 3 500 technical items cross- referenced from various amateur magazines. In addition, a library contents catalogue was started. Most of the books held in the library, the amateur magazines and some other popular magazines have now been included. Some if the older magazines and some loose-leafed material is still to be done.

When this is completed, the next task will be to list war-time and commercial/disposal type equipment and any modifications to them. Current equipment reviews will also find their way to the listings.

Members may make use of the listings by personal visits during the office hours of 11am to 2pm weekdays, and 7 to 9pm on Wednesday evenings. Alternatively, write to PO Box 1066, Parramatta, NSW. 2150, or ring during office hours. The best day to catch Aub is Tuesdays.

Donations, particularly books, are most welcome, so that we may keep adding to the reference range. If you find that you have to dispose of your own, or perhaps those in an estate, please contact the office first — they may be suitable to add to the Divisional Library. If we are unable to use them, one of the clubs, who have storage may be able to take them.

AR

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WE SERVICE WHAT WE SELL

VK4 WIA Notes

Bud Pounsett VK4QY
Box 638, GPO, Brisbane, Qld. 4001

PRESIDENT'S REPORT 1985

In presenting this Annual Report, I would like to thank all members of the WIA Queensland Division for their support during 1985, the 75th Anniversary Year of the Wireless Institute of Australia.

COUNCIL

Council members for 1985 were: *John Aarsse VK4QA, President, Ken Ayres VK4KD, State WICEN Co-ordinator, Dennis Breitkreutz VK4KEW, Member, Harold Bremerman VK4HB, Special Services, Bill Dalgleish VK4UB, Outward QSL and Club Liaison Office, David Jerome VK4YAN, Junior Vice-President and Minute Secretary, Theo Marks VK4MU, Honorary Secretary, Ross Mutzelburg VK4IY, Senior Vice-President and Alternate Federal Councillor, Paul Newman VK4APN, Honorary Treasurer, Bud Pounsett VK4QY, News and Information, Valerie Rickaby VK4VR, Service Liaison, Hugh Shaw VK4BHS, QSL Liaison Officer.*

Ex-officio Officers were: *Guy Minter VK4ZXZ, Federal Councillor for Queensland, Barry Ker VK4BIK, Publicity and Lecture Organiser for the General Meetings.*

Others, associated with Council operations were: *Dave Richards VK4UG, Membership Secretary, David Jones VK4NLV, Chairman Radio Club Conference 1985, Gordon Loveday VK4KAL, VK4 Intruder Watch Co-ordinator, Anne Minter VK4KZX, WIAQ Bookshop Manager, Jack Gayton VK4AGY, VK4WIA Station Manager, Murray Kelly VK4AOK, Inward QSL Manager, Ron Smith VK4AGS, Education Officer.*

Council met 13 times during the past year, using various locations as a meeting place. Initially, meetings were held in the new building of the Brisbane City Mission, the Valley. From May until August, meetings were held in the Training Department Rooms of the ABC in Toowong and, since September, in rooms of the Newmarket High School. Changing the meeting venue twice during the past year did not help the proper functioning of Council, as such arrangements which are essential for Council to operate in accordance with regulations applicable and acceptable to registered companies.

If surroundings are not up to standard, meetings tend to resemble Club Committee meetings and to attempt to force a meeting to adhere to rules is often interpreted as trying to *gag* or *stifle* meetings.

Council for 1986 has to look very closely into acquiring a more suitable venue for future Council meetings.

MEMBERSHIP

Early in 1985, Council awarded Life Membership of the Wireless Institute of Australia, Queensland Division, to **Frank Nolan VK4FN,** for his services to amateur radio in Queensland over a long period of time.

Due to his illness, the official presentation was delayed until Frank would have been well enough to attend a General Meeting. A date was finally set, but unfortunately Frank became a Silent Key one week before the presentation was due. A special presentation of the Life Membership Badge and the Citation was made to Frank's widow at her home on the day that Frank should have officially received the Badge.

A keen amateur and WIAQ member will be sadly missed.

Further comments on Membership are very similar to those made in my 1984 report — very few *students* became members, but join as soon as they have passed the various examinations and received a call sign. Also, unemployment caused a number of members to discontinue membership, while those on superannuation often found it hard to rejoin as they were not eligible to come under the *pensioner-rule.*

EDUCATION

Although no *Training the Trainer* seminars were held in 1985, Ron VK4AGS, liaised very closely with Brenda Edmonds VK3KT, Federal Education Co-ordinator, in the field of standardisation of examination formats for the various amateur grades. Thanks are also due to Guy VK4ZXZ and Ross VK4IY, our Federal Representatives, to bring this closer liaison about.

It is pleasing to learn that finally TAFE has agreed to include amateur radio on their technical hobby syllabus. This means that, providing suitable instructors are found, many more can study for the various licence grades at very reasonable rates.

VK4 QSL BUREAUS

Bill VK4UB, reported to Council on a number of occasions that there are still people trying to send QSL cards through the Bureau whilst not being a member of the WIAQ. The present system of including the AR address label with the QSL cards works very well and saves quite a bit of time. Close liaison between Dave VK4UG, Membership Secretary, and Bill, assist new members greatly when they are sending their QSL cards through the Bureau without the address label.

Murray VK4AOK, and his ever-growing band of helpers, including a computer, do a great job in sorting the incoming QSL cards. Now, if only amateurs in Queensland also co-operated, the job would be much easier. Too many just are not interested in receiving cards, or put the blame on the Bureau if they do not receive them, forgetting that they did not notify changes in call sign or QTH. The majority of the clubs co-operate very closely with Murray, but the odd ones spoil it.

An added problem for the Inwards QSL Bureau is the fact that nearly every country in the world has a different style of writing and often a **V** looks like a **U,** an **F** like a **T** and so on.

The WIAQ members can assist overseas or interstate QSL Bureaus by writing the addressee's call sign in large, readable BLOCKLETTERS.

NEWS AND INFORMATION SERVICE

This service continues to grow in popularity, with an increasing number of listeners from inter-state and overseas joining the HF call-backs. If there are complaints about the News Service as far as *news* is concerned, you the member can take the blame. If no news is forthcoming, there is just no news. This does not only apply to the Broadcasts, but also to QTC and the AR VK4 section. Thanks are due to the many volunteers who regularly operate as relay stations in the HF bands and, of course, the VK4WIA Station Manager, Jack VK4AGY, and last but not least, our regular News Reader, Bonnie Pounsett. The VK4 News and Information Service can now also call themselves the Award Winning News Service, as both Bud and Jack were honoured with the WIA 75th Anniversary Gold Medallion.

PUBLICATIONS

Anne VK4KZX, again did a magnificent job as WIAQ Bookshop Manageress, despite a serious illness which curtailed her activities in the Bookshop to a great extent for a considerable period.

The sales were not as good as in previous years, possibly because student numbers have dropped rather steeply. Other problems are similar to those reported last year, supplies from overseas sources are, to say it kindly, very erratic and, at times, very expensive in so far that the senders use the wrong delivery system, resulting in extra expenses such as wharf duties and so on. And the fall in the Australian dollar did not help matters either.

Postage costs are fortunately not as high as anticipated as many more clubs have discovered that they are helping both their own members, themselves and the WIAQ Bookshop by ordering in bulk.

INTRUDER WATCH

We repeat what was said last year:

The Sweat and Blood of so Few in Defence Against so Many Intruders

Regardless of the above, Gordon VK4KAL, reports the removal of several intruders, including interfering harmonic transmissions. But he also reports that he is still waiting for the promised reports from those clubs who publicly stated that they supported the IWS and would be sending in regular reports.

VHF UHF ADVISORY COMMITTEE (now QTAC)

This Committee of two, Brian Rickaby VK4RX and Paul Hayden VK4ZBV, saw its name changed to QTAC, Queensland Technical Advisory Committee, but still performed the same duties as under the old name. A number of proposed repeater applications were investigated, as were some special application repeaters, Liaison with the relevant DOC sections solved some problems and all applications were approved.

HISTORIAN

Alan Shawsmith VK4SS, and his wife have done a tremendous amount of research into the history of amateur radio development in Queensland. Many articles in Amateur Radio during 1985 showed the results, with the November issue as the crowning glory, so much so, that many contributions will have to wait for inclusion in future editions of Amateur Radio. The commemorative booklet is nearing completion, a bit after the promised date, but so much came to light that a constant revision was necessary. 1986 should see the publication of OUR BOOK. For his work over the past years in the field of amateur radio journalism, Alan was awarded the 1985 VK4 Merit Badge, which was presented to him by both the Federal President, David Wardlaw VK3ADW, and the Divisional President, John Aarsse VK4QA, in a ceremony at Alan's QTH after the conclusion of the 1985 Radio Club Conference.

AWARDS AND CONTESTS

The Queensland Award still attracts many *triers* and a number were issued during 1985. A problem looms in the near future with many Shires clamouring to become, for reasons unknown, fully fledged Cities. When this comes about, the rules will have to be reviewed very closely.

Our very own Jack Files Sunshine Contest continues to grow in popularity and the number of *interstate competitors* participating are a joy to he heart of Joe Ackerman VK4AIX. To stay on top, more VK4 participants are needed. This, by the way, also applies to the Remembrance Day Contest.

WICEN

WICEN continued to assist wherever there was a need for their services. In south-east Queensland, the hailstorm in January convinced some SES regional officers that extra assistance was needed under such circumstances. The Gold Coast and Redcliffe SES regions sought the assistance of local amateurs to become wardens and, by all accounts, these units operate quite satisfactorily, with the one from Redcliffe being the first to have acted under actual emergency conditions. This idea is worthwhile for other regions to investigate, especially the smaller communities not covered by large radio clubs in central and northern Queensland.

WICEN officers kept their hands in portable operations in all areas by assisting various organisations as communication personnel.

1985 also saw the publication of the Queensland WICEN Handbook, the result of extensive research by Ken Ayres VK4KD, and assistance from the many VK4 WICEN co-ordinators, officers and the VK2 WICEN organisation.

A number of WICEN officers and other amateurs in Queensland also assisted the Australian Third Party Network during the Mexico and Columbia disasters.

TREASURERS REPORT

This report will be issued separately and it should be noted that the surplus for 1985 is well below that for 1984. This is partly due to the present economic situation with very little surplus coming

onto the market. *Surplus Sales* is normally a money spinner for the Division. Also, booksales dropped markedly. There will need to be some serious work done during 1986 by Council to find ways and means to contain expenses and make any increase in membership fees as low as possible. One way in achieving this is, of course, **more members.**

But that depends to a great extent on present members to achieve. Regardless of the figures presented, our Honorary Treasurer, Paul VK4APN, has done a very good job considering the present economic conditions.

1985 RADIO CLUB CONFERENCE

Club motions were not as abundant as in previous years, so more time was spent on the incomplete Federal Motions. The Conference was further honoured to have as its VIP guest, the Federal President of the Wireless Institute of Australia, David Wardlaw VK3ADW, who, during the Conference, presented an interesting talk on WARC. Thanks again, from Council and Delegates, to all those who worked behind the scenes to make this Conference possible. And that includes you too, Delegates from all over Queensland.

SPECIAL EVENTS

The introduction of Channel 28 SBS-TV services in the Brisbane area caused a few problems to the SEQ ATV Group's Repeater, so much so that they featured on all television news services. However, the action taken by the SEQ ATV Group and its co-operation with the relevant authorities, actually raised the status of amateur television in the eyes of the industry and the authorities alike. Thanks SEQ ATV Group for a job well-done.

SEQ ATV Group stole the limelight again with their celebrations on 50 years of television in Australia, originating from the Tower Mill in Brisbane. Again, a good coverage, both in the written and visual news media, with a *national* coverage on the highly rated SBS TV News Service.

Three regional conventions took place during 1985, the BARC Fest in Brisbane, the North Queensland Convention in Townsville, and the Gold Coast Hamfest. All were very well organised, well attended and very successful. At the North Queensland Convention, which incidentally was telecast live by the Townsville ATV Group, I had the pleasure in presenting the second WIAQ Merit Badge for 1985 to Les Bell VK4LZ, for his long association with the North Queensland Amateur Radio Movement. Due to his work, many amateurs gained their licences and Les is still a great behind-the-scenes worker to assist amateur radio in North Queensland.

75th Anniversary Celebrations were held all over Queensland, each club doing their own local things. The work done by the Darling Downs ARC and Oakey are to be recommended as they brought amateur radio right into the limelight with good publicity in the local papers.

The culmination of the national festivities was the dinner in Melbourne which was attended by many international and national celebrities. Guy, as Federal Councillor and his wife Anne, were among those at the Melbourne Dinner. By all accounts, it was an event not to be forgotten very lightly.

At State level, Council faced a mammoth task to select 20 Queensland amateurs worthy to be recipients of the commemorative WIA 75th Anniversary Gold Medallion, A special committee was set up and its recommendation to Council, with minor modifications, was accepted. The list of those honoured is published in the January 1986 issue of *QTC*.

In addition to those listed, Guy VK4ZXZ and I received the Commemorative Medallion from the Federal President of the WIA.

FEDERAL REPRESENTATION

On behalf of Council and members I would like to express my thanks to Guy VK4ZXZ, the VK4 Federal Councillor, and Ross VK4IY, the VK4 Alternate Federal Councillor, for their tremendous efforts to keep up-to-date and to report regularly to the membership and Council, all the news forthcoming from the Federal Office in Melbourne, and from other Divisions.

Their work during the 1985 Federal Convention, in presenting our Division's viewpoints is greatly appreciated.

For his work, Guy was especially honoured to accompany the Federal Delegation to the IARU Region 3 Conference, in Auckland, New Zealand, the only non-Federal Official to be included. Congratulation Guy.

THE FUTURE

It is very difficult to gaze into the crystal ball and predict what is going to happen in the future in these days of rapid developing technical advancement. No attempt will therefore be made to make a prediction, except to say, amateur radio will face many exciting changes and challenges. And it is up to us all to be prepared to meet these changes and challenges ... ***united in the Wireless Institute of Australia.***

CONCLUSION

As I mentioned last year, due to certain circumstances beyond my control, I was again unable to visit many clubs, especially those in the regional areas. However, the North Queensland Convention provided me with a chance to meet with many members of clubs in the northern and central regions. Had I been in the circumstances as I am now, while writing this report, I would have been able to see many more clubs, especially those in the western regions.

It is my intention to make 1986 my final year as a member of the WIAQ Council. I have had a long innings, some 15 years, and it is about time that others will *volunteer* to serve on Council. There were times that I wanted to resign, but because of insufficient nominations for Council, many of the longer serving Council members were *volunteered* into continuing their term for the sake of amateur radio in Queensland.

Therefore, may I thank you all for your past support, you the members, the clubs, SES, the Department of Communications, Federal Executive, and my fellow Council members.

May 1986 bring further successes to this Division and to the Wireless Institute of Australia in general.

John Aarsse VK4QA
President, WIA VK4 Division.

AR

Five-Eighth Wave

Jennifer Warrington VK5ANW
59 Albert Street, Clarence Gardens, SA. 5039

As you are probably aware by now, or will be by the time you read the *Silent Keys,* we lost our old friend and recently retired Divisional Historian, Jack Coulter VK5JK, on 26th January. What made Jack's death even more poignant was the fact that he was to have received one of the WIA 75th Medallions and he never knew. We had even arranged that Rowland VK5OU was going to deliver it in person to Jack at Daws' Road Hospital on the day of the WIA meeting when the others were to have been presented, 28th January.

Since then, I have spoken to Dennis, Jack's elder son, and after discussion with his brother Robert, who is in Sydney, they have decided that it would be a nice gesture for us to display the medallion in the Historian's Cabinet, in memory of Jack, which Council is very happy to do.

MARINE MOBILE

I hear that the activation of the VK5JSA call sign from Cape Willoughby Lighthouse and marine mobile from the ferry PHILANDERER was a great success and several of those involved are now getting writers' cramp from writing QSL cards and awards. I understand the elements were not very kind to Bill VK5FR/VK and Jack VK5FV, who operated marine mobile on the PHILANDERER for four days prior to the lighthouse activation. Not than an *Ancient Mariner* like Jack would admit to feeling the slightest bit sea-sick, but I gather that they were very glad to be back on dry land again!

J150 PLACINGS

The activation of the VK5JSA call sign also boosts people's scores for the J150 Award by 15 points at a time. The first 12 Awards have already been issued, which has taken away the fear that perhaps it might be rather difficult to achieve. There had to be a count-back to decide some placings as many were received on the same day. The order is as follows:

1 VK5SJ	7 VK3XB (1st all CW)
2 ZL1AQO (1st overseas)	8 VK2PLN (1st novice)
3 VK3ABO	9 VK3KS (1st YL)
4 VK5ZN	10 VK3AJU
5 VK2AKP	11 VK4VAT
6 VK3CQP	12 VK5AQZ

Congratulations to all the above, and it is nice to see that the three VK5s are all active on the nets or activities, they put in a great deal of time for the benefit of others who want to get the Award, not just for themselves.

DIARY DATES

11-13th April 13th Clubs' Convention (for those involved).
22nd April AGM.
29th April Buy and Sell.

AR

To be eligible for the Intruder Watch Award, you must contribute an Intruder Log. Send yours in now! !

VK3 WIA Notes

WIA VICTORIAN DIVISION
412 Brunswick Street, Fitzroy, Vic. 3065

NEW MEMBERS

The members and officials of the VK3 Division extends a warm welcome to the following new members.

Noel Abel, F Clark VK3FC, Judyth Clarkson VK3NNT, John Couch, Philip Course VK3PHY, Maurice Cox, Raymond Curran VK3DQN, Ray Dean VK3POG, H Fauzy YB6MF, Michael Franck, Vincent Fournair VK3NSP, P Gardner, R Gomerski, Richard Griffiths VK3XRG, Hamilton High School VK3AHS, Andrew Harding, Arthur Henwood VK3NAH.

John Herrmann, R Jackson VK3CNJ, Edward John VK3BUJ, K Jones VK3XHI, Phillip Lewthwaite VK3CCV, Terence Morrison VK3DVZ, R Oldfield, Gregory Papworth VK3BYR/A92DY, Stephen Smith VK3XSS, Seiichi Tanaka JE6BYA, Richard Valentine VK3PTI, Art Van Esch VK3EO, Robert Williams VK3VOS, R Magilton VK3DRC, W Massey VK3PSB and G Manders VK3CGM.

NEW POSTAL ADDRESS

As of the 1st April 1986, the VK3 WIA Broadcast postal address will be *PO Box 440, Carlton South, Vic. 3053.* Members contributing to the Broadcast are advised to use the above address and **please** remember it is Carlton *South,* as correspondence with just Carlton in the address may not be delivered.

AR

Over to You!

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

CONGRATULATIONS VK2

While we would have liked to have been the winners of the 1985 RD Contest, we recognise that mistakes can happen and indeed we feel very sorry for Ian Hunt, who is undoubtedly most embarrassed. We hope such embarrassment stops with this letter.

Many things have been said, but the fact remains that we do not want to be seen as hollow winners upon some strict interpretation of the rules, nor do we want to see the results declared null and void so as to deprive the real victor of its trophy.

This division would like to support the spirit of the contest and therefore extends to the VK2 Division our heartiest congratulations. We will meet you all next time around, and if we win, we will deserve it.

VK1 Divisional Committee.
AR

CHALLENGE

I enjoyed reading the "challenge" in February issue! (Editorial). I appreciate the fine material in each issue and trust Amateur Radio will continue to have good support from all of us out here.

Sincerely,

Don MacLean VK2DON,
Box 280,
Ingleburn, NSW. 2565.
AR

MEMORIES

Roy Stephens VK4BRS, very kindly loaned me a copy of the November 1985, issue of Amateur Radio, as it contained mention of my days as VK4YL.

I found the whole article on pre-WWII days in VK4 very exciting as I recalled so many names and calls that were a part of our life then.

My father, VK4GK, was involved in many of the experiments with Arthur Walz VK4AW, Bill Harston VK4RY, Bill Wishart VK4WT and Nim Love VK4JL, and his Log Books read like a diary of those pioneering days.

Other amateurs mentioned in the issue who brought back many happy memories were Leo Feenaghty VK4LJ, Matt O'Brien VK4MM, Alf Guilford VK4AP, Len Grey VK4LN, Herb Sholz VK4HR and Reg Vickary VK4RV, to name a few — and of course, Rev Delbridge VK4RJ — I recall his Sunday Morning Sessions. Then also, I read with avid interest about Eric Lake VK4EL and Roy Belstead VK4EI.

By the way, my father's initials were A H MacKenzie. He endeavoured to get the call sign 4AM, the 4AK, but was told that both were reserved for future broadcast stations, so he obtained 4GK, with the result that many thought his christian name started with G — but all called him "Mac".

Congratulations to VK4SS on his article, and thanks for the happy memories this publication brought me.

Yours sincerely,

Madeline Pugh (nee MacKenzie) ex-VK4YL,
5 Conrad Court,
Nambour, Qld. 4560.
AR

REPEATERS — THE FUTURE

I wish to comment on the article which appeared in AR, February p8. Some ideas in the DOC paper quoted in this article concern me.

1 It suggests cross-linking be within the same amateur band. If this had been law in the USA, the following experiment would not have been possible. From Sydney, I have operated through several 10 metre FM USA repeaters which, in turn, were linked to a two metre repeater where I spoke with mobile and home stations, which in turn were linked to 70cm and I was able to converse with an operator in his garden using a walkie-talkie. This linking repeater experiment, which is an everyday occurrence in US amateur radio, allowed a walkie-talkie operator to achieve a contact half-way round the world. There is no reason to prohibit amateurs who wish to conduct such imaginative experiments, which push our service to the fore-front of new dimensions and capabilities which previously did not exist.

2 It suggests that 1300MHz be used for link frequencies. Many unused frequencies may exist on lower bands where licensees do not need to invest in new equipment.

3 It suggests cross-linking of repeaters should not provide access to stations in capital cities. In my opinion, all of the above points are unnecessary restrictions. Point three goes so far as to remove one aspect of radio communication experimentation from amateurs who happen to live in a geographic location presumably because they do not co-incide with the Department's idea of what repeaters are all about. What amateurs do on their bands should be an amateur matter and the Department should encourage all and any aspect of experimentation and not limit new innovations which the descendants of the original radio experimenters wish to attempt.

These severe restrictions only serve to create and encourage a purely radio-telephone system. Comparisons between amateur and commercial repeaters should be terminated.

No reason is given for not allowing individuals to hold repeater licences. In the USA individuals can hold such licences, so whether it be an individual or a group, I don't see why it matters. Whilst I agree with orderly development, this should not be used to hinder initiative and experimental motivation.

Use of repeater stations: Regulation 4.13 (a)Approval for a repeater depends on the requirement of a particular area and (b)Repeaters shall not be intended for long distance communications. I feel these guidelines should not exist for the amateur service because they intrude into the scope of experimentation which is possible with such systems.

I do not agree with the idea that says cross-band linking of a repeater should not be permitted where an amateur can originate a signal on a band he is normally permitted to use.

This virtually eradicates any ideas of linking possible 10 metre repeaters in Australia, an activity which has long been part of US amateur radio and was recently introduced in Canada. Such a consideration is really un-necessary as limited licensees have long been appearing on HF via amateur satellites. Furthermore, unlicensed newcomers can operate over HF under supervision so there should be no concern at the appearance of LAOCP's over HF on a 2 to 10 metre crossband repeater. This issue has lost all meaning in the USA where the FCC no longer allocates call signs which reflect the class of licence. In the USA, the ARRL, with its proposed updated novice licence, would allow 10 metre packet with a 10 to 20 metre gateway for novices, as well as a 10 metre to VHF/UHF gateway. Voice as well as data repeaters automatically identify all call signs, including relays involved, a feature not available over the satellite.

The idea that the maximum number of cross-linked voice repeaters should be three and that RTTY and Packet should have no maximum will limit experimentation. Voice repeaters should also have no limit.

On packet radio, the controllers being sold and built throughout Australia allows anyone to digipeat through your station even when you are in contact with someone else.

The American PK64 manual says, "it is common courtesy to leave your digipeater and equipment on while you are in the shack so that others who cannot contact you direct can digipeat via your station". YJ8RG would like me to digipeat him from 20 metres to 2 metres so that he can ask questions about packet radio from the experts on VHF in Sydney.

The PK64 allows me to do many things with packet radio, I hope the regulations will encourage, rather than restrict this.

Relaying between bands is legal in the US and we need to regain this right (this right was removed in 1977 and has since restricted activities).

Linking cross-band; repeating; automatic operation, unattended operation, remote control, digipeating — these should all be part of the individual amateur's sphere of exploration.

We need continued WIA participation with the addition of co-ordination of frequencies for the individual requiring temporary WIA suggested frequencies on which to experiment. We need to remove all un-necessary restrictions and give the WIA maximum flexibility so that frequency co-ordination involving any arrangement of the above can proceed so we achieve maximum benefit.

I would like to express my thanks to the FTAC article which has encouraged all amateurs to contribute their ideas and my thanks to DOC for presently seeking ideas and studying those issues.

Yours faithfully,

Sam Voron VK2BVS,
2 Griffith Avenue,
Roseville, NSW. 2069.
AR

PIRATING OF A CALL SIGN

In addition to my VK2 call sign, I still retain a South African call, ZS5MD, which I have held since 1949.

Sadly, I have just been advised that a yacht en route to Australia is using the ZS5MD call sign illegally.

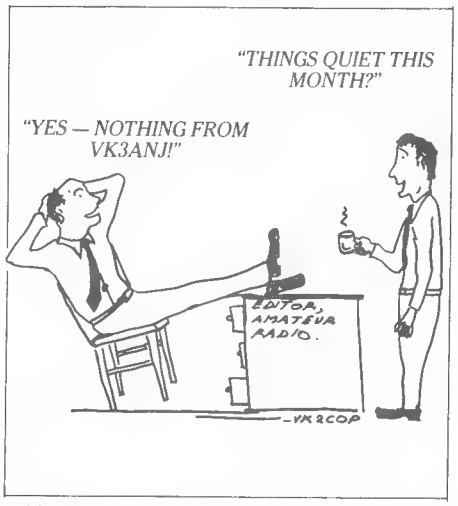
I wish to advise my fellow amateurs, QSL managers and DX columnists of this disappointing event.

Your fraternally,

Charles Bean VK2AOY/ZS5MD,
21/180 Spit Road,
Mosman, NSW. 2088.
AR

SLIGHTLY VOCAL?

It was felt that this cartoon may bring some smiles to the faces of those who have noted, from time-to-time, the articles/letters/comments contributed by Lindsay VK3ANJ.



Lindsay has seen a copy of the cartoon and appreciates its sentiments!

R N Torrington,
4 Thistle Street,
South Pascoe Vale, Vic. 3044.
AR

DISCUSSION PAPER VIEWS

It is no news to many of us that amateur radio is in dire straights. Our fine hobby has become less than it can and should be and consequently attracted fewer and fewer new people to its ranks.

It is for this reason that I was overjoyed to see a discussion paper entitled *Amateur Radio — Future Direction* produced and circulated by Jim Linton VK3PC and Roger Harrison VK2ZTB. These gentlemen have examined the problem in remarkable depth and with great breadth of vision.

Furthermore, they have proposed solutions which are not only appropriate, but based on good old fashioned common sense.

Amateur radio grew up at the start of this century. As the decades ticked by it came to maturity and is now becoming prematurely old. This concerns me. I hope it concerns you. People such as Jim and Roger deserve all the encouragement that we can give them.

Let us not kid ourselves. Amateur radio is not all that it has been. Now it is all black box rigs, gibberings on repeaters and precious little tinkering technology or plain old experimentation.

In the early days people manufactured their own capacitors and most of their other parts. There are many wonderful stories about hand grinding quartz crystals and similar feats.

The World Wars brought more advancement in the technology. Many improvements were made in components, techniques and knowledge.

After the Second World War, there were many rigs available and large stockpiles of other gear. Not much of it was directly suitable for amateur radio. This was the great period of experimentation for the radio amateurs of the world. Rigs were put together out of cheap surplus gear and then modified almost beyond recognition. New techniques were invented and others refined.

The 70s saw the advent of black box rigs and a steady decline in the experimental nature of amateur radio. There was little experimentation or excitement and young, enthusiastic experimenters went elsewhere.

The years up to the 60s are gone, never to return. It is now time to prepare for the 90s.

The thing we need more than anything else is young blood. Are you aware that only nine percent of licensed amateurs are under 31? That only a further 38 percent are between 31 and 50? Over half our ranks are people more than 51 years of age. The brutal fact is that we are all here for only so long. If things continue as they have been for just a couple more decades, amateur radio will be decimated.

No ifs, no buts. What we do today cures amateur radio or kills it forever.

People find their way into amateur radio as they do elsewhere in life. As they pass by, they look into some of the open doors; if those doors are closed they cannot enter.

An example. Many people became interested in CB radio in its early days and came into amateur radio through this door. When the novice licence was introduced the door opened wider and more came through.

Now the door is digital. Many of those who would have been bitten by the *amateur radio bug* became computer hobbyists. Small computers are rather like trains sets. They awaken a powerful curiosity in us all, but the fascination inevitably wears off.

In the late 70s, the micro-computer arrived and some (such as myself) abandoned amateur radio for new fields of experimentation — building micros. In the 80s, black boxes dominated hobbyist computing and the challenge went out of it.

Packet radio and other technologies changes that. The challenges lost to computing have moved back to amateur radio.

Many in the hobbyist micro-computer community would dearly like to get into amateur radio and explore digital technologies further. Talking to them brings out one common theme: they had a look at amateur radio and liked what they saw. Then they looked at the licensing requirements and saw that there just was not a way in for them.

What they can do with computers proves their technical competence, but their talents are digital — not analogue. To try to make them enter amateur radio through a door which is entirely analogue has not worked, and will not work.

Amateur radio has FAX, Computer RTTY, AMTOR, ATV, Satellite Communications and Packet Radio. Powerful incentives for computer hobbyists to join our ranks. They are not doing it because the door is closed. There is no appropriate entry level digital licence for them to enter by.

Jim and Roger have examined these questions and more in their paper. They have included facts, figures, diagrams and logic which cannot be faulted. More than that, they have proposed solutions. Real solutions to real problems. Please read it. Please help.

David Furst VK3YDF,
AR

DISCUSSION PAPER

In regard to the Discussion Paper, February AR, as the paper is directed mainly at the younger generation it may be timely to give a *young point of view.*

There has been little interest in amateur radio from the younger generation, and on top of that, a decline in the amateur fraternity.

From a 1984 WIA survey

AGE	PERCENTAGE
Below 21	*1*
21-40	*28*
40-60	*41*
60 plus	*29*
50 plus	*52*
Below 30	*9*

This survey of amateurs is completely contradictory to a population survey by the Australian Bureau of Statistics.

50 plus	*approx 25*
Below 30	*50*

I have been an amateur for over 18 months and have come across few young amateurs. I know of three others my age, (15 years). I attempted starting an amateur radio club at school, but it quickly lapsed due to lack of interest. Their interests in amateur radio are large, but they are not capable of obtaining a license, as some are not too bright scholastically.

I believe, by increasing the number of licences available the hobby's attractiveness will also be increased, particularly by the younger generation.

I look forward to talking to many new amateurs on the air, and I thoroughly support the proposals brought forward in the Discussion Paper.

Adrian Amato VK1NYA,
13 Fullagar Crescent,
Higgins, ACT. 2615.
AR

DISCUSSION PAPER

I am in favour of most of the proposals in the discussion paper, February AR. The introduction of more entry points into the hobby, particularly those catering for the computer generation, would play an important part in getting more people into the amateur ranks.

About the only thing in the paper to which I have any objection, is the suggested increase in power limits for AOCP and LAOCP licence holders. This matter has been well-argued before, so I will not say any more.

The extra licence classes would allow many people to expand their current interest in data communications into the amateur bands. I, personally would appreciate digital privileges as I have been a "hacker" for more years than I have been interested in amateur radio.

However, we need to do more than just making more entry points. What good would these entry points be if no one, except those already interested in reading amateur books/magazines, were to see it?

I think some advertising would need to be done, both now and if/when the new licences were put into operation. The promotion would need to be explanatory and say what the hobby is, how to get a licence, and all the things you can do with the various licences. To cover all of this, I think considerably more is required than an advertisement in a few electronic magazines. The target audience must cover more than just people with an interest in electronics and radio. Perhaps the best was to achieve this would be to have a decent sized article, explaining all the points above, in several daily newspapers through-out Australia, and some major regional ones, as well, with a view to achieving maximum coverage. A television article would also be advantageous.

Another important area to cover is to give talks/demonstrations at schools and colleges, an excellent way of reaching the young people.

Perhaps, while discussing demonstration stations, it would be important to emphasise "cheap equipment". In every demonstration station there must be an operating piece of CHEAP equipment. Many people, especially the younger generation, find it difficult to be able to afford cheap used equipment (about $300). There are few, if any, kits available for less than this price, and many newcomers would not feel confident enough to build them, anyway. A cheap ready-built, novice-suitable transceiver, for 80, 15 and/or 10 metres, is required, preferably for under $150.

Another matter of importance is the role of clubs and individuals. There needs to be a local place where prospective, or just plain curious, people know they can obtain information. In this respect, demonstration stations in public places need the name of the local club prominently displayed to invoke interest. They must also have an adequate supply of pamphlets containing the information, as set out above for media stories.

If the proposed licence grades are introduced, it would also be a good idea to produce articles for the many computer and electronics magazines to show what can be done on amateur radio, with an emphasis on the computing side. I shall put one such article in a small publication of a local club (Geelong) in the near future. I will ask for comments from the readers and try to determine what would make amateur radio more appealing to them. I will inform this column of any results that come from it.

Due to the difficulty in determining who is going to be interested in amateur radio we have to aim our advertising at the general populace on a much larger scale than anything that is currently being attempted — we need to let people know that we exist.

Many of the above suggestions are based on my experience with amateur radio, and what I found, and still find, lacking in the general literature I see. (See page 60, February AR for how Conrad became interested in amateur radio). I was introduced to amateur radio by a cousin and was totally unaware of the existence of amateur radio, let alone the various grades of licence and different modes (you are really allowed to transmit television?), and so on. It was quite an eye opener and I had not led a sheltered life, either. I have been interested in computers and electronics for many years, and read many books of varying types. Amateur radio had not been brought to my attention.

I would gladly offer my assistance to any project that will try to achieve bringing amateur radio to the general populace and to remember the money restrictions of the younger generation. Now that I am on-air, I would gladly pleased to meet with others with similar ideas. (I did finally get on-air much to the detriment of my bank balance, which now reads in three-figures — two being to the right of the decimal point!

Cheers and 73.

Conrad Canterford VK3PHW,
26 Pyke Street,
Tatura, Vic. 3616.
AR

DISCUSSION PAPER

I have studied the Discussion Paper by Messrs Linton and Harrison, and whilst finding it *thought provoking* and interesting, consider some of the suggestions advanced to be detrimental to the Amateur Radio Service in the long term.

One cannot deny the advance of technology, especially in the digital or transmission fields, but this same advance in technology would appear to merit raising the standard of technical qualifi-

cations required for the privilege of using the amateur bands. The Linton and Harrison document advocates the reverse.

The Discussion Paper refers to the downturn in amateur radio, and seeks to ensure *its long term survival.* It claims a level of involvement of young people, and supports this with percentage figures. But, it makes no mention of corresponding figures for these groups in preceding decades of the hobby.

Messrs Linton and Harrison advocate a *Telephony License* for beginners, at a lower technical standard, with VHF/UHF privileges. This seems a retrograde step, as persons who cannot, or do not wish to qualify for amateur status at the current technical level (which is not particularly high), can use both HF and UHF bands allocated to the Citizens Band Service.

We must acknowledge the advances being made in digital technology, and the fact that in some areas they are closely allied to techniques of radio transmission; but *the hobby needs to be made meaningful for a whole new untapped generation of computer hobbyists* and *the emerging computer technology should be married to amateur radio for the fullest possible benefit of the hobby* would appear to be unqualified.

I seriously wonder who would gain the most benefit of this *marriage* on the scale proposed by Messrs Linton and Harrison — the amateur radio movement or the computer hobbyists?

Certainly there are many computer hobbyists who would be a great asset to amateur radio, and who could contribute much, both new technology, and stimulus to our hobby; however there are many so called *computer hobbyists* who by their very lack of technical qualifications and immaturity could prove to be of great nuisance-value if allowed on the amateur bands.

One should not expect to induce into the amateur radio service the type of computer hobbyist we want, by a lowering of the license technical standard.

A modification of the current novice license, still maintaining the technical and code standard, to allow digital transmission modes would appear to have merit, but only if those modes were confined to a specified portion of the band. This allocation should be stipulated by DOC and not by a so-called *Gentlemans' Agreement.*

Amateur radio has many aspects of endeavour which appeal to widely differing groups who use the spectrum. No group should be denied part of that spectrum, simply because they choose to use a different mode of transmission (provided they cause no interference with others).

The transmission of digital encoded data can produce several significant problems of which most amateurs are aware. The hobby is, to a large degree, *self-regulating* and operators using telephony and CW, have over the years, managed to exist fairly well together — because they can converse with one another despite the different modes of transmission.

I admit I am slightly biased in outlook regarding the use of the amateur bands, and as an HF DX operator I am primarily concerned with some of the problems which can arise from unrestricted use of data transmission on HF.

For example — if I am enjoying a contact with a fellow amateur and another station commences transmission on phone or CW close to my operating frequency, I can politely ask him to QSY, and if he is a true amateur in spirit he will apologise for the interference and seek another frequency. Should the offending transmission be in a digital mode, the operator will not even hear my request. This situation can lead to a lot of unpleasantry and conduct which is not becoming to our hobby.

I urge all my fellow amateurs to seriously consider the Discussion Paper by Messrs Linton and Harrison, and whilst we should agree to embrace new technology and advances, and make our hobby attractive to the new generation of prospective amateurs, we must exercise caution and prudence.

We must not allow our technical standard to be lowered — if anything it should be raised! We should not indiscriminately advocate any mode of transmission, which in the long term, could prove to be detrimental to the goodwill and friendship built by many amateurs throughout the world in years gone by.

This goodwill and friendship can be maintained by tolerance, acceptance of advancing technology, and unfortunately, by some degree of firm regulation, and maintenance of a high technical standard in the hobby.

Co-author of the Discussion Paper, Jim Linton, indicated that the thoughts and recommendations contained therein were his and Roger Harrison's private views, and not necessarily those of the VK3 Division Council, even though at this time he is the current President of the Division. Similarly, the opinions expressed in this letter are my own, and in no way reflect the collective views of the VK3 Division Council, of which I am a member.

In fact, at the time of writing, the *Discussion Paper* has not yet been tabled or considered by Council.

Barry Wilton VK3XV,
Box 22,
Balaclava, Vic. 3183.
AR

THE MEXICAN EARTHQUAKE FROM THE OTHER SIDE

The 19th September 1985, began like any other day, but at 7.19am Mexicans were reminded just how insecure and uncertain life can be. Mexico was shaken by an 8.1 earthquake, and another, measured at 7.5 on the Richter scale, was experienced on 20th September. Unofficial reports in Mexico indicated that 8 000 died, 30 000 were injured and 100 000 were left homeless.

Maria XE1CVY, had not used her amateur radio equipment for over a year due to license renewal problems, but during the crisis of the earthquake she was given permission to run health and welfare traffic. Dozens of amateur operators responded to her calls and assisted in passing hundreds of messages to anxious families and friends in many parts of the world.

Maria operated for 12-14 hours a day for over a month, only stopping long enough to catch a bite to eat. Maria was ably supported by her husband Mack, and her neighbours.

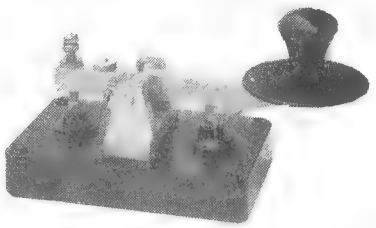
From material supplied by Maria Jones XE1CVY and contributed by Freda Leaver VK2SU.

Maria and her husband Mack teach at the Baptist Theological Seminary of Mexico and Maria has also had the call signs KA5CVY and CX5BJ. Maria, originally from Mississippi, is multi-lingual and was a participant in a regional Music Conference in Costa Rica in January 1986, where she presented a paper and took voice and singing classes for six hours.

THOUGHT FOR THE MONTH . . .

You can tell when you are on the right road — it's uphill.

THE KEY TO GOOD CW



There has never been a better designed Morse Code Key — SOLID, ROBUST and BEAUTIFULLY BALANCED.

MODEL 610
POST OFFICE PATTERN MORSE CODE KEY

Spring tension is adjustable to minimise wrist fatigue when transmitting for long periods and these quality Clipsal keys are beautifully balanced for fast, reliable operation.

PRICE $50 **POST PAID AUSTRALIA**

WILLIAM **WILLIS** & Co. Pty. Ltd.
MANUFACTURERS AND IMPORTERS
98 CANTERBURY ROAD, CANTERBURY, VIC., 3126
PHONE: (03) 836 0707
AR85

GO BACK TO HOME BREW

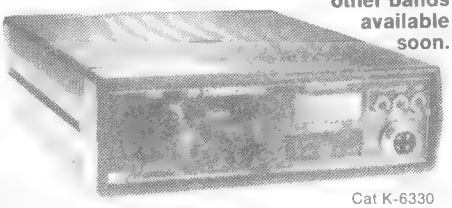
It's the affordable amateur radio!

With the dollar so weak against overseas currencies, imported amateur products are out of many amateurs' reach. Consider the benefits of home brew:

- You supply the labour - so you save!
- You sharpen up those old skills: soldering, construction, etc.
- You catch up with the latest technology: otherwise you could get left behind!
- And best of all, you're keeping alive one of the basic reasons for being an amateur in the first place: you have the skill to do it yourself!

HF TRX KIT

80m version supplied — other bands available soon.

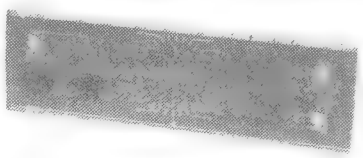


Cat K-6330

Ideal for the novice — or the old timer. 12V operated, so it's a great mobile too. Any 500kHz band between 3 and 30MHz 30 watts SSB output and CW or SSB operation. Digital frequency display, complete kit including deluxe moulded case.

$349

DIGITAL RDF KIT



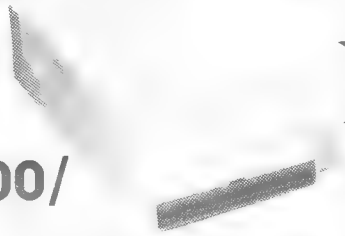
Here's a great new kit to build — and it will give you a real edge in fox hunts, field days, etc. Uses digital techniques to plot and display direction of any signal. Use in conjunction with virtually any FM receiver (or transceiver). Operates over 50 to 500MHz range (with suitable receiver).

Cat K-6345

Ideal for locating 'jammed' transmitters!

$139

Try these latest kits from DSE:



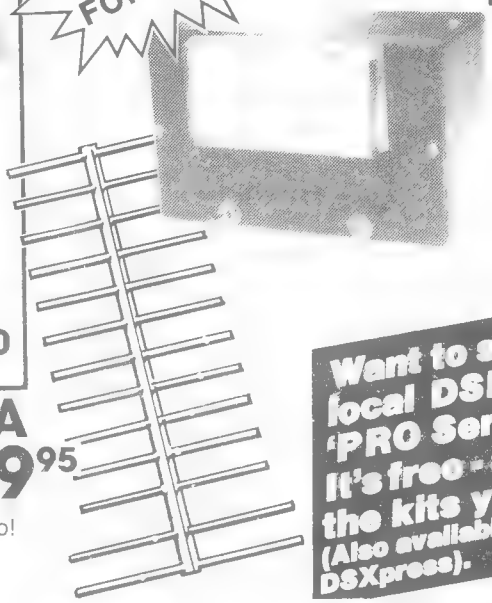
VZ-200/ 300 RTTY DECODER

The low cost way to go RTTY. Use your VZ-200 or VZ-300, add this decoder, and you're ready for RTTY decoding. Simply plugs into computer's expansion port. Suitable for both amateur and commercial standards.

Cat K-6318

$69.50

DSE NO 1 FOR KITS



UHF WATTMETER

Operate on 70? Here's a low-cost way to check out your system. No more guesswork — the UHF Wattmeter tells you instantly power output plus allows SWR extrapolation. At this price, you can't go wrong!

Cat K-6312

$49.95

UHF YAGI ANTENNA

At last a kit to build a commercial quality Yagi. Everything's supplied — boom, brackets, elements, the lot. 13 elements, 12.5dBi gain. Go on - give it a go!

$39.95

Cat K-6305

RG-213 Low-loss
Co-ax to suit: Cat W-2099 $2.75 per metre.

Want to save even more? Ask your local DSE store for a copy of our 'PRO Series' Bonus Kit Catalogue. It's free - and you could save $$$ on the kits you build!
(Also available to mail order customers through DSXpress).

B 123AC

DICK SMITH ELECTRONICS PTY LTD

• NSW • Albury *21 8399* • Bankstown Square *707 4888* • Blacktown *671 7722* • Blakehurst *546 7744* • Bondi Junction *387 1444* • Brookvale *93 0441* • Campbelltown *27 2199* • Chatswood Chase *411 1955* • Chullora *642 8922* • Gore Hill *439 5311* • Gosford *25 0235* • Hornsby *477 6633* • Liverpool *600 9888* • Maitland *33 7866* • Newcastle 02 61 1896 • North Ryde *88 3855* • Parramatta *689 2188* • Penrith *32 3400* • Railway Square *211 3777* • Sydney City *267 9111* • Tamworth *66 1961* • Wollongong *28 3800* • ACT • Fyshwick *80 4944* • VIC • Ballarat *31 5433* • Bendigo *43 0388* • Box Hill *890 0699* • East Brighton *592 2366* • Coburg *383 4455* • Essendon *379 7444* • Frankston *783 9144* • Geelong *43 8522* • Melbourne City *67 9834* • Richmond *428 1614* • Springvale *547 0522* • QLD • Brisbane City *229 9377* • Buranda *391 6233* • Chermside *359 6255* • Rockhampton *27 9644* • Southport *32 9863* • Toowoomba *38 4300* • Townsville *72 5722* • SA • Adelaide City *212 1962* • Darlington *298 8977* • Enfield *260 6088* • Salisbury *281 1593* • WA • Cannington *451 8666* • Fremantle *335 9733* • North Perth *328 6944* • Perth City *321 4357* • TAS • Hobart *31 0800* • NT • Stuart Park *81 1977*

Silent Keys

It is with deep regret we record the passing of —

MR JACK M COULTER VK5JK
26th January 1986
MR J R DUNNE VK3AXQ
MR R G EDMEADES L50122
29th January 1986
MR K G LILLYCRAP L31057
MR WILLIAM PETER (BILL) NELSON VK2KH
14th January 1986
MR COLIN WILLIAM MCCAMLEY VK4CY
9th January 1986
MR HORRIE OAKES VK2FA
5th January 1986
MR CHARLES ROBERT WHITE VK3AUP
22nd February 1986
MR R J WOOD VK4YZ
3rd November 1985

Obituaries

JACK COULTER VK5JK

Jack, who was the Divisional Historian for the state branch of the WIA, passed away on Sunday, 26th January 1986, at the Repatriation Hospital, Adelaide, aged 73.

He was one of the Old Timers and a WIA Council member of this branch after WWII. Jack was first employed by the PMG, and obtained his original license, VK5JD, in 1936.

When war was declared in late 1939, Jack enlisted in the Royal Australian Navy, and was soon a leading telegraphist, seeing overseas service in the Middle East area, as well as service in New Guinea and Australian coastal waters.

After the war, Jack became a communications officer for the Department of Civil Aviation, where the undersigned first met him at Darwin, in early 1947, when the Aeradio station, VZDN, was being constructed.

Later, in the 1950s, Jack went to work as a technician for *Farmer's Radio,* but shore life was dull, and Jack went back to sea as a radio officer in the Merchant Service, using his Second Class Certificate instead of "letting it rot in the desk drawer".

Jack married in 1942, and his wife Jean was a lovely person whose quietness was a contrast to Jack's enthusiasm. Jean died in 1969, and there are two surviving sons, Dennis and Robert.

After some years at sea as a radio officer in the oil-tankers of H C Sleigh, Jack came ashore in the middle 70s, to retire from wandering, and settle down at last.

His health began to fail him about four years ago and during his remaining years he was Divisional Historian in South Australia. His terminal illness prevented him from giving his full weight to this position, but Jack was awarded a Service Medallion from the WIA for his long service to the organisation as a council member over many years.

There are many people, particularly in the WIA and radio circles, who were helped by Jack over the years and he will be missed by many.

Ray Bennett VK5RM
AR

WILLIAM PETER NELSON VK2KH

Bill Nelson VK2KH, passed away on 14th January 1986, after a long illness. He was first licensed in 1935, and was a member of the Zero Beat Radio Club and a keen CW operator.

In recent years, he enjoyed DX contacts on SSB and CW, and was also well-known on the two metre band.

Bill was active until shortly before he entered hospital.

Jim Webster VK2BZD
AR

COLIN WILLIAM MCCAMLEY VK4CY

It is with the deepest regret that we report the passing of Col McCamley on 9th January 1986, in the Nambour General Hospital (surgical) at the age of 54 years.

Born at Yeppoon, Queensland, Col spent his early years farming in the Gympie, Sarina and Nambour areas, but it was in the building trade that he spent most of his working life, controlling many major construction projects on the Sunshine Coast.

Col was a devoted family man. After an earlier misfortune in each of their lives, Col and Ivy married in 1970, and between them moulded their joint families of seven children into one unified, stable family unit.

During his lifetime, Col was actively involved in many activities including the CMF, Boy Scout Movement and the Volunteer Fire Service, but his great love, when time permitted, was amateur radio.

Col received his limited call, VK4ZMC, in January 1965 and, shortly after, upgraded to VK4CY and was active throughout both the HF and VHF bands. He only bought the minimum amount of equipment necessary and, apart from transceivers, preferred to build his own. His antennas, tower, rotator, control panel, ATU, power supplies, test equipment and most other gear were all home- brew.

He will be remembered throughout Queensland for his contribution to amateur radio. He was a State Controller of the WIAQ. He reconstituted the Sunshine Coast Amateur Radio Club in October 1978, and led it through the difficult earlier formative years as president. Col was always present to help and advise, and to work unobtrusively without thought of personal reward for as long as he was able.

In true amateur spirit, Col helped many aspiring amateurs through their studies and quite a few of these are proud to have VK4CY as their first contact recorded in their logs.

Col will be sorely missed by members of the Sunshine Coast ARC, by the amateur fraternity and his many friends, relatives, children, grandchildren and his lovely wife, Ivy.

Roy Hudson VK4ARU on behalf of the Sunshine Coast ARC
AR

Magazine Review

Roy Hartkopf, VK3AOH
34 Toolangi Road, Alphington, Vic 3078

(G) General : (C) Constructional : (P) Practical without detailed constructional information : (T) Theoretical : (N) Of particular interest to the Novice : (X) Computer Program

WORLDRADIO — January 1986. Cel Tel Industry attacks amateur radio (G). DX news. RTTY/AMTOR news. Traffic in Emergencies.
SHORTWAVE MAGAZINE — December 1985. TRF Receivers (P & N). Single Valve Transmitters (N).
AMSAT UK OSCAR NEWS — December 1985. Update news on OSCAR satellites.
73 MAGAZINE — October 1985. 25th Anniversary issue.
RADIO ELECTRONICS — December 1985. What's new in ICs (G). Switching power supplies (P). CD Players (G).
WHAT'S NEW IN ELECTRONICS — December 1985. General Review of new Components, ICs, Test and Measuring Equipment, Cables, etc.
AR

QSP

SOLAR FLARES

Several Solar Flares in the week leading up to 10th February 1986, caused the worst disturbances to the Earth's magnetic field for 25 years, and whilst severely disrupting HF communications, provided the best six metre DX for 20-25 years.

Associated with a region of high activity on the surface of the sun, the disturbances culminated with a large flare on 6th February, which caused disruptions to HF transmissions throughout the world.

The flares are unusual as the have occurred close to the quietest period in the 11-year solar activity cycle.

Contributed by Peter Wolfenden VK3KAU

SOLAR GEOPHYSICAL SUMMARY — DECEMBER 1985

SOLAR ACTIVITY

Solar activity was low throughout the month. Two regions on the visible polar disc during the month contributed to an increase in the 10cm flux value during the middle of the month, however there was no significant flare activity.

10,7cm FLUX

1, 2/12 = 70; 3/12 = 71; 4/12 = 70; 5/12 = 72; 6/12 = 73; 7/12 = 74; 8/12 = 75; 9, 10/12 = 78; 11/12 = 79; 12/12 = 80; 13/12 = 78; 14/12 = 79; 15/12 = 83; 16/12 = 87; 17/12 = 83; 18/12 = 81; 19, 20/12 = 80; 21/12 = 78; 22/12 = 76; 23/12 = 74; 24/12 = 72; 25/12 = 70; 26, 27, 28/12 = 69; 29/12 = 68; 30, 31/12 = 69. Average: 75.0.
SUNSPOT NUMBER 12/85 = 17.2. YEARLY AVERAGE 6/85 = 17.5.

GEOMAGNETIC ACTIVITY

10/12 The geomagnetic field was at active levels between 0700-1520UTC. A=17.

13/12 The field was active with a brief period around 1100UTC at minor storm level. A=28.

18, 19/12 A sudden commencement was observed at 0647UTC on 18th. This was followed by minor storm conditions between 0800 and 1000UTC. The field was again disturbed on 19th, particularly between 0600-1300UTC. There was a large positive bay around 1330UTC and a smaller one at 1850UTC. A=13, 33.

27-31/12 The field became active about 2100UTC on 27th and reached storm level between 0200 and 1400UTC on 28th. After quietening on 29th, the field again reached storm levels on 30th, declining to unsettled conditions after 1800UTC on 31st. A=11, 35, 7, 35, 24.

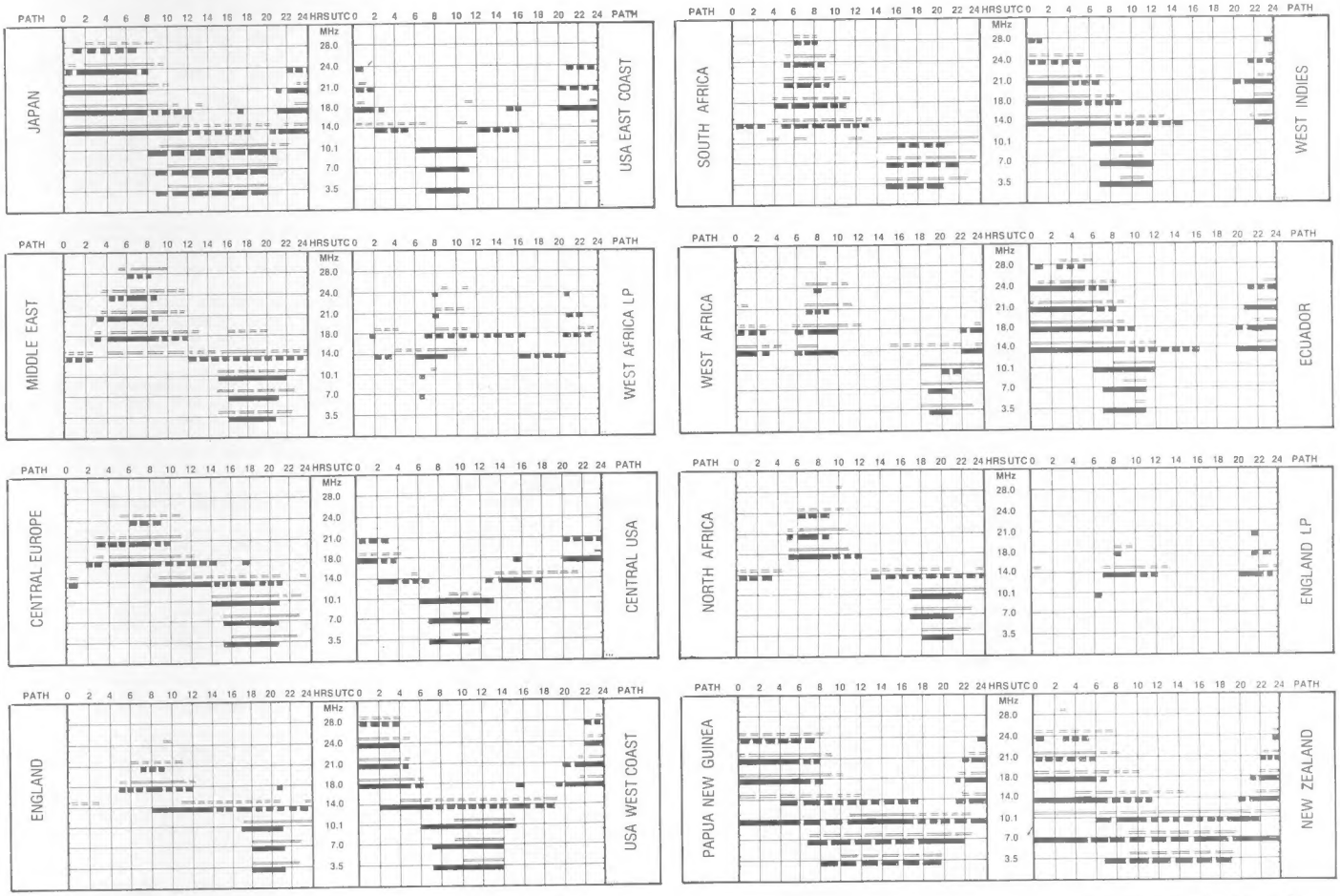
The geomagnetic field reached storm levels on three occasions during the month, but only one was a recurrent (Coronal Hole) type, the other two being the results of filaments erupting from the surface of the sun. There were four days on which the A index exceeded 25 and six days over 15.

Extracted from Solar Geophysical Summary supplied by the Department of Science IPS Radio and Space Services.

AR

Ionospheric Predictions

Len Poynter VK3BYE
14 Esther Court, Fawkner, Vic, 3060



LEGEND

From Western Australia (Perth)

From East Australia (Canberra)

Better than 50% of the month but not every day (continuous lines)

Less than 50% of the month (short broken lines)

Mixed Mode Dependent on angle of radiation (long broken lines)

Paths unless otherwise indicated lie: LP = long path) all paths are short path.

Predictions reproduced courtesy of the Department of Science and Technology. Ionospheric Prediction Service, Sydney.

All times in UTC.

North American Listings
Including Hawaii & U.S. possessions

1986 radio amateur callbook

The only publication listing licensed radio amateurs throughout the world, since 1920.

In this issue
- 470,898 licensed Radio Amateurs
- 31,207 new licenses included, issued since the 1985 edition
- 107,676 changes in listings
- Then & Now – Call letter changes
- QSL Managers
- Radio Amateur Prefixes of the World
- Table of Call Sign Allocations
- DXCC Countries List
- Standard Time Chart
- Census of Amateur Radio Licenses of the World
- Census of Amateur Radio Licenses of the U.S.
- International Postal Information
- World Wide QSL Bureaus
- Silent Keys
- Plus many other features

64th Anniversary Edition
For Use Throughout 1986

NEW!

NOW AVAILABLE

The 1986 NORTH AMERICAN and FOREIGN LISTINGS CALL BOOKS

are now obtainable from your DIVISIONAL BOOKSHOP.

International Listings
exclusive of North America & Hawaii

1986 radio amateur callbook

The only publication listing licensed radio amateurs throughout the world, since 1920.

In this issue
- 431,929 licensed Radio Amateurs
- 43,648 new licenses included, issued since the 1985 edition
- 78,984 changes in listings
- Then & Now – Call letter changes
- QSL Managers
- Radio Amateur Prefixes of the World
- Table of Call Sign Allocations
- DXCC Countries List
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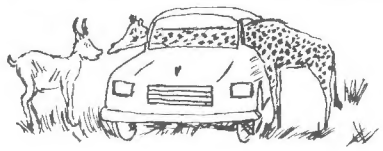
- Silent Keys
- Plus many other features

64th Anniversary Edition
For Use Throughout 1986

NEW!



DEADLINE

All copy for inclusion in the June 1986 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by midday, 21st April 1986.

Hamads

PLEASE NOTE: *If you are advertising items FOR SALE and WANTED please write each on a separate sheet of paper, and include all details; eg Name, Address, Telephone Number, on both sheets. Please write copy for your Hamad as clearly as possible. Please do not use scraps of paper.*

* Please remember your STD code with telephone numbers
* Eight lines free to all WIA members. $9.00 per 10 words minimum for non-members
* Copy in typescript, or block letters — double-spaced to **Box 300, Caulfield South, Vic. 3162**
* Repeats may be charged at full rates
* QTHR means address is correct as set out in the WIA current Call Book

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

Conditions for commercial advertising are as follows:

$22.50 for four lines, plus $2.00 per line (or part thereof)

Minimum charge — $22.50 pre-payable

Copy is required by the Deadline as indicated below the indexes on page 1 of each issue.

ΞTRADE ADSΞ

AMIDON FERROMAGNETIC CORES: Large range for all receiver & Transmitting Applications. For data & price list send 105x 220mm SASE to: **RJ & US IMPORTS,** Box 157, Mortdale, NSW. 2223. (No inquiries at office . . . 11 Macken Street, Oakley). Agencies at: Geoff Wood Electronics, Rozelle, NSW. Truscott Electronics, Croydon, Vic. Willis Trading Co, Perth, WA. Electronic Components, Fishwick, Plaza. ACT.

ΞWANTED — NSWΞ

ATLAS 210X NOISE BLANKER: Model PC-120. Don MacLean VK2DON, QTHR. Ph:(02) 605 1099 anytime.

COMMODORE 64 COMPUTER: In good condition. VK2AZT. Ph:(069) 42 1392.

YAESU FT75 or FT75B VFO UNIT: Any FT75 or 75B equipment. VK2APJ, QTHR. Ph:(047) 59 1651.

ΞWANTED — VICΞ

FRONT COVERS: For SF6 tx/rx, SF6 vibrator supply, gang drive units & coupling cross. Also long bolt through chassis for MN26 sets. Controllers for models H, L, N or M MN26 sets. VK3AQB. Ph:(03)337 4902.

HF LINEAR: FL2001Z or similar. Franz VK3DVD. Ph:(03) 726 7137.

ICOM IC PS-20 POWER SUPPLY: Working order with circuit if possible. Cash for right unit. Ted. Ph:(03) 751 1721.

OCTAL TYPE SOCKET: 9 pin, with or without cover & cable clamp for Collins rx power cable. VK3BFB, QTHR. Ph:(03) 587 1593.

PROP PITCH MOTOR: For spare parts or complete unit. Don VK3DON, QTHR. Ph(03) 848 3059.

ΞWANTED — QLDΞ

PARTS TO COMPLETE WIRELESS STATION A 510: Key (Aust) No1, Antenna flexible 8 ft (Aust), antenna lightweight 68 ft, feeder antenna 70 ohms TSE(W) 8-499, inductors tuning 8ft flexible antenna -520, user handbook 7610-010-0284, crystal units style DE ZAA-0646 (10 off). Please send details to S J Stephens VK4KHQ, QTHR. Also any technical information would be appreciated.

ΞWANTED — SAΞ

MAGAZINE: 73 magazine for November 1972 or copy of article on pages 226 to 244. Ivan VK5QV, QTHR.

ΞWANTED — TASΞ

YAESU YC7B DIGITAL DISPLAY FOR FT7B: Please contact Bill VK7NWR, QTHR. Ph:(002) 44 4089.

ΞFOR SALE — ACTΞ

TS-600 6m TCVR: $315. 70cm power dividers 4-way. $25. 2-way $20. KLM 1:1 sleeve baluns $26 each. VK1VP, QTHR. Ph:(062) 49 6348 AH.

ΞFOR SALE — NSWΞ

COLLINS 51-S1 RX: Plus manual, wing emblem. Collins station control 312B4 & manual, round emblem. Mint cond. Collins linear 30-S1 & manual, round emblem. Mint cond. Runs 4CX1000A Eimac ceramic tube. Ph:(02) 918 3835.

COMMODORE PLUS 4 COMPUTER: Has built-in word processor, spread sheet & file manager. Ideal log book & DX call sign index. Good Cond. $290 ONO or straight swap for Commodore 64 in like cond. VK2AZT. Ph:(069) 42 1392.

HF TCVRs WITH MATCH SUPPLIES & SERVICE MANUALS: 700CX 400W. $350. 100MX 100W all SS mobile/base $425. Both in immac cond. VK2BTL, QTHR. Ph:(02) 487 3383, 359 3434 BH.

HYGAIN 204BA: 4 el monoband 20m Yagi in good cond. $195. Buyer to collect. PMG straight brass key. $65. Firm prices. Ph:(047) 87 7003

LINEAR PARTS: HT power supply t'former 3760-0-3760 CT 750mA 74lbs. New. S-choke filter caps, bleed resistors — Rectifier-Centrifugal fan. Ph:(02) 918 3835.

RTTY GEAR: ATE Telegraph Measuring Test Set with in-built 'scope vector display, 50-190 Bauds in 5 steps with 20 Bauds variable, encoder, short/long line distortion facilities, mark/space characterisation, etc in self-contain case. $75. Model ASR33 (110 Baud) teletype on stand with 110V t'former, 2 rolls tape, all manuals. $115. Model 15 complete. $45. Various other Model 15 bits — drives, baskets, base, keyboard, etc. G F Hughes VK2ZNY, QTHR. Ph:(02) 807 6916.

SHIMIZU DENSHI SS105s HF TCVR: Incl 100W linear, mic, h'book, leads, etc. Provision for WARC bands. Ideal for mobile use. Used once. $300. Peter VK2AGB. Ph:(02) 521 6482.

TL-922 KENWOOD 2kW LINEAR: In ex cond. Originally $1500, will sell $850 ONO. Also, Multi-7 lots of crystals. $100. Gerald VK2AGS, QTHR. Ph:(02) 93 4170.

TRANSVERTER: 10/11 to 80 metres with built-in VXO. $70 ONO. VK2APJ, QTHR. Ph:(047) 59 1651.

TR-2600 KENWOOD 2m FM H'HELD TCVR: As new. Comes in orig carton & includes 240V 50Hz charger, helical ant, ear- piece, wrist strap, manual. $415 ONO. Laurie VK2AQW, QTHR. Ph:(02) 938 4311 BH or (02) 969 2160 AH.

SIEMENS 100 TELEPRINTERS: 1 complete & running, 1 for parts $60. ST6 demod & ETI 731 modulator with power supply $60. STI 733 demod with VK7TM program for Microbee $20. 16k Microbee & cassette with some programs $200. Tx & rx RTTY oscilloscopes $25 each. Dave VK2DRH, QTHR. Ph:(02) 771 4031.

YAESU FRA-7700 ACTIVE ANTENNA: Unopened, unwanted gift. $68 posted. VK2KSD, QTHR. Ph:(02) 456 1577.

ΞFOR SALE — VICΞ

FILTER CONDENSERS CHANEX 3000 VDCW: 8 only at $5 each. Also, 1 only Yaesu FT-707 at $600 with mic. Bob Cunningham VK3ML, QTHR. Ph:(03) 20 7780.

ICOM 740 WITH FM UNIT: FL-44 N/B SSB filt $750. Icom 730 with FL30 PBT filt, mob mount $600. Both tcvrs in ex cond in orig pack, with mics, manuals. Hustler mob whips, 6 bands with mast bump mount, heavy duty spring $100. Ph:(03) 878 5305.

HOLIDAY OR RETIREMENT QTH: Excellent radio location at Mount Beauty, 30km to Falls Creek Ski Village & Bogong High Plains. Skiing, trout fishing, walking. 85km to Albury/Wodonga. 15m crank-up/tilt-over tower with rotator & quad antenna system. Shack adjoins living area. Private yard, garage, swimming pool, in very quiet area. Asking $39,950. VK3DUG, QTHR. Ph:(057) 57 2591.

PANADAPTOR TYPE BC 1032A: Requires 5.25MHz input, sweep rate is 500kHz either side of centre. All condensers replaced. Ex cond. $75 ONO. VK3AQB. Ph:(03)337 4902.

ROTATOR EMOTATOR: 502SAX including cables & connections. Ex cond. Also TH3 Jnr tri-band beam & balun. $550 the lot ONO. Icom 735 full coverage tcvr, inc base mic & mounting bracket. Brand new still in box. Great mobile rig, save on new price $1195 ONO. Ph:(051) 99 2393.

SINCLAIR TIMEX 1000: (American version of the ZX 81). 16kB expansion, power supply, user manual, & all leads. Like new $90. VK3DVD. Ph:(03) 726 7137.

TS-820S & MATCH AT-200 ANTENNA TUNER: Mic, book, etc. New tubes, great performer. $550. TH3JR Hygain 3-band, 3- element antenna, on ground. $100. VK3GA, QTHR. Ph:(03) 29 7256.

YAESU WHIPS: Set of RSM2 RSL3.5, RSL7, RSL14, RSL21, RSL28. $60. Prop-pitch motor $30. 3 Selsyn Indicators $5 each. Power supplies for both $5 each. Shure 444 mic, high Z $40. D104 mic $5. 4 x 807 valves, cost of freight. VK3TG, QTHR. Ph:(058) 52 1636.

ΞFOR SALE — QLDΞ

BLACK CTW ANTENNA: resonant 3-30MHz, hardly used, near new. New price $120 — asking $90 ONO. Prepared to negotiate. Rob VK4CRM, QTHR. Ph:(076) 35 0142.

YAESU FT-101E HF TCVR: Ex cond with mic, manual, & workshop manual. No mods. $500. Rod. Ph:(07) 277 5624 BH.

ΞFOR SALE — WAΞ

FT-290R: 2m, SSB, CW, FM, Mobile Bracket & carry case. Good cond $320. Wayne VK6AMS. Ph:(097) 55 4106.

YAESU FT-107M: With FP-107, YM-37 mic, Kenwood AT-130 ant tuner. Handbooks & original cartons. All new condition. $900 ONO. John VK6AJC, 12 Beach Street, Bicton, WA. 6157. Ph:(09) 339 2140.

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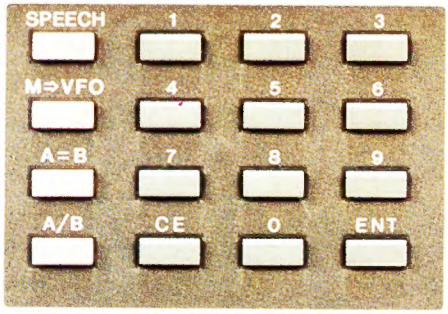

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VOL 54, No 4, APRIL 1986